Manitoba
Energy and Mines
Mines Branch

Aggregate Report AR91-1

Aggregate Resource Inventory of the Rural Municipality of Argyle

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ABSTRACT

An aggregate resource inventory was carried out in the Rural Municipality of Argyle. Airphoto interpretation, followed by field investigations, was used to identify and define sand and gravel deposits. Fifty seven sand and gravel deposits were identified including 30 sand and gravel pits, and l3 borrow pits. In addition, 9 shale bedrock quarries that are potential sources of aggregate were identified. Estimated reserves are in excess of 255.8 million cubic metres. The sand and gravel is characterized by high shale content.

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FIGURES

Figure 1: Location of The Rural Municipality of Argyle iv

MAP

Map AR91-1: Aggregate Resources in The Rural Municipality of Argyle . . . . . in pocket

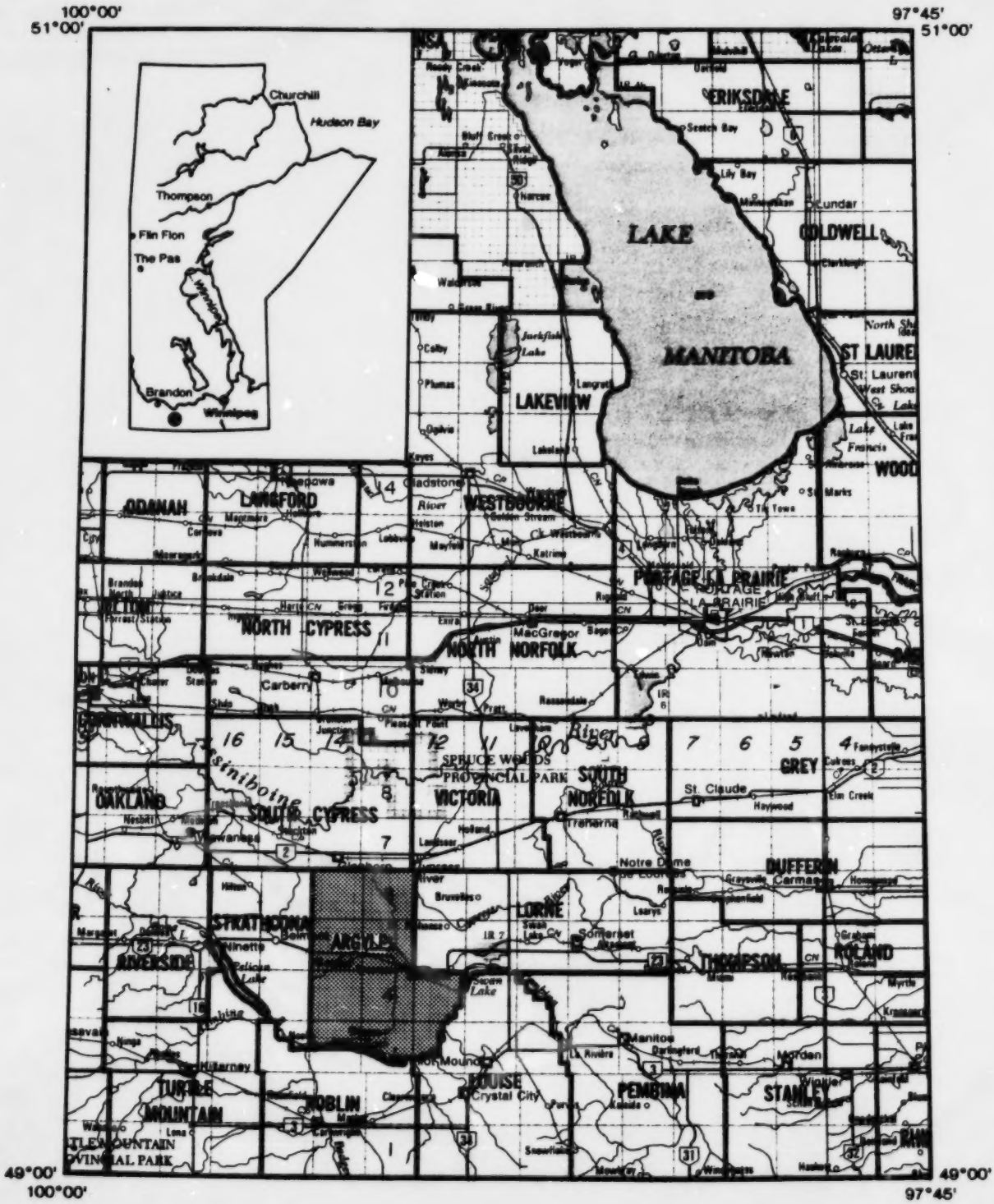

Figure 1: Location of the Rural Municipality of Argyle.

INTRODUCTION

OBJECTIVES

An aggregate resource inventory was carried out in the Rural Municipality of Argyle, with the objectives of determining the location, quality, and reserves of aggregate resources. The information contained within this report may be used to assist in land-use planning, resource management, and for consumers of sand and gravel.

LOCATION AND ACCESS

The study area (Fig. 1) encompasses 764 square kilometres located 156 kilometres southwest of Winnipeg. The Municipality includes Townships 3-6 and Ranges 12-14 west of Principal Meridian. The largest settlements are the Towns of Baldur and Glenora. Access is by Provincial Highways 23 and 5 and several provincial roads including P.R. 342, 440 and 245. Although most of the municipality is accessible by section roads, large areas within the Tiger Hills comprise hilly terrain and swamp lands and are thus inaccessible.

METHODOLOGY

Geological field investigations were conducted during the summers of 1989 and 1990. Airphotos at scales of 1:56 000 and 1:15 840 were used to identify potential aggregate deposits. Existing sand and gravel pits including borrow pits were examined and sampled. Undeveloped and potential deposits were tested by backhoe to a maximum depth of 4 m.

The coarse aggregate sample fraction (19.1-76.3 mm) was sieved in the field and weights recorded. Clast sizes greater than 76.3 mm (3") were recorded as sparse, moderate or abundant. A representative sample of the less than 19.1 mm size range was retained and sieved in the laboratory. Sizes less than 0.074 mm were recorded as combined silt/clay fraction. The field sieved coarse aggregate was used to perform the petrographic analysis when sufficient sample was available. Each clast was classified according to rock type and the number of clasts for each rock type was counted. Rock types were grouped into four categories: good, fair, poor and deleterious according to their suitability as aggregate. The percent shale by weight was also calculated for the coarse fraction. The percent shale by weight was also calculated for the 4.76-9.5 mm size for selected samples. Reserve estimates were calculated by multiplying deposit depth by deposit area, and adjusting the reserves for areas depleted or not available for mining. Surface and mineral ownership was recorded for each aggregate deposit.

PREVIOUS WORK

The surficial geology map by Conley (1986) was used to assist with the identification of potential aggregate deposits within the municipality. Manitoba Department of Highways and Transportation Services (1976, 1977) tested several gravel pits which included backhoe testing of selected sites and grain size analysis of gravel samples.

ACKNOWLEDGEMENTS

Able field and laboratory assistance was provided by Gerald Olsen. Maps and figures were drafted by M. Carvalho under the direction of E. Truman. Mineral ownership data for the municipality was provided by The Crown Lands Branch.

AGGREGATE RESOURCES

Fifty seven aggregate deposits were identified. These include 30 gravel pits, 13 sand and gravel borrow pits and 9 shale bedrock quarries and borrow pits. All but two of the gravel deposits have defined boundaries. Most bedrock quarries are located along The Greenway Valley meltwater channel. Several sand and gravel sites overlain by silt or till and several sites consisting of reworked bedrock were identified as potential sources of sand and gravel.

Total reserves within the study area are 255.8 million cubic metres, which includes 54.6 million cubic metres of fine sand and silty fine sand. A total of 66 sites were tested by backhoe and 42 samples were analyzed. Deleterious constituents within the aggregate clasts include shale and carbonate incrustrations.

Exposure and deposit information is provided in Appendix A. This information includes deposit reserves, exposure data, sieve analysis and petrographic analysis. Location of deposits, exposures and backhoe test sites are shown on Map AR91-1.

Sand and gravel deposits consist of glaciofluvial, outwash, and post glacial minor beach strandlines. The glaciofluvial deposits include eskers and crevasse fills consisting mostly of fine sand and silt. Outwash occurs along the flanks of The Pembina Spillway and along meltwater channels emanating from the Darlingford Moraine. Minor beaches and eroded bedrock scarps comprising fine grained reworked shale bedrock are located within a minor lake basin 12 kilometres north of Baldur. Major aggregate producing areas include deposit 12351 approximately 5 kilometres northeast of Neelin, deposits 12303, 12307, 12313 and deposit 12354 north of Rock Lake. Deposit 12355 north of The Pembina Spillway is another major producing area. The location of these deposits is shown on Map AR91-1 accompanying this report.

REFERENCES

Conley, G.G.

1986: Surficial geology and stratigraphy of the Killarney-Holmfield area, southwestern Manitoba; University of Manitoba, M.Sc Thesis (unpublished), 165p

Manitoba Department of Highways and Transportation

1976: Aggregate Resource Inventory Block File 4 and 5, Geotechnical Section, Materials and Research Division.

1977: Aggregate Resource Inventory Block File 16 and 17, Geotechnical Section, Materials and Research Division.

APPENDIX A: EXPOSURE DATA

DEPOSIT # 012301

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-18-006-14W	203500	20	162800	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		162800		

EXPOSURE INFORMATION

EXPOSURE #: BB122 (SW-18-006-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.9 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-3.9 M. PEBBLY COARSE SAND, MASSIVE
3.9-4.0 M. SILTY TILL

SIEVE ANALYSIS

	PERCENT PASSING											
	3.0	1.5	3/4	3/7	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB122 A (SW-18-006-14W)	100	94	82	67	54	43	35	25	11	9	9	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB122 A	33	0	22	45	30	SHALE 4.7-9.5 MM.= 28%

DEPOSIT # 012302

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-17-006-14W	561000	60	224400	PRIVATE/PRIVATE	
SE-18-006-14W	297000	25	222750	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		447150		

EXPOSURE INFORMATION

EXPOSURE #: BB124 (SW-17-006-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-3.5 M. MASSIVE PEBBLY COARSE SAND
3.5-4.0 M. FINE SAND OCCASIONAL PEBBLE

EXPOSURE INFORMATION

EXPOSURE #: RY549 (SE-18-006-14W) VISITED: 8907
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER TILL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BA: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
BORROW PIT/DUGOUT, 0.0-1.0 M. SILTY PEBBLE GRAVEL
POOR EXPOSURE 1.0-1.5 M. SILTY TILL

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB124 A (SW-17-006-14W)		100	98	84	73	59	49	39	25	11	9	9	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB124 A	24	0	19	57	44	SHALE 4.7-9.5 MM. = 42%

DEPOSIT # 012303

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-07-006-14W	80000	65	28000	PRIVATE/PRIVATE	
NW-07-006-14W	495000	45	272250	PRIVATE/PRIVATE	
SE-07-006-14W	40000	0	40000	PRIVATE/PRIVATE	
SW-07-006-14W	90000	0	90000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		430250		

EXPOSURE INFORMATION

EXPOSURE #: RY465 (NW-07-006-14W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER COARSE SAND
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
PIT #1 IS 50 M. X 60 M., LOCATED ON SIDE OF HILL, SCREENED STOCKPILES PIT #2 IS 150 M. X 110 M. AND IS OVERGROWN

GENERAL STRATIGRAPHY:
0.0-0.5 M. SOIL
0.5-1.5 M. MASSIVE PEBBLE GRAVEL
1.5-3.0 M. BEDDED COARSE SAND DIPPING TOWARDS EAST, HIGH SHALE

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY465 A (NW-07-006-14W)		100	98	90	79	65	53	44	37	24	14	13	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY465 A	12	9	0	79	56	SHALE 4.7-9.5 MM. = 67%

DEPOSIT # 012304

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-07-006-14W	17500	90	1750	PRIVATE/PRIVATE	
SE-07-006-14W	70000	90	7000	PRIVATE/PRIVATE	
NW-08-006-14W	17500	30	12250	PRIVATE/PRIVATE	
SW-08-006-14W	175000	30	122500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		143500		

EXPOSURE INFORMATION

EXPOSURE #: BB125 (SW-08-006-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.7 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND HIGH SHALE
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BA: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
HIGH SHALE AND SILT MAKES
DEPOSIT UNECONOMIC

GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-3.7 M. PEBBLY SAND, HIGH SILT AND SHALE
3.7-4.0 M. SANDY TILL

DEPOSIT # 012305

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-05-006-14W	70000	30	49000	PRIVATE/PRIVATE	
SW-05-006-14W	120000	40	72000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		121000		

EXPOSURE INFORMATION

EXPOSURE #: RY466 (SE-05-006-14W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 3.0 M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.6 M.
MATERIAL AT BA: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
INACTIVE PIT, OVERGROWN, UNABLE
TO GET SAMPLE 3.0 M. PEBBLE GRAVEL,
3 000 CUBIC METRES REMOVED,
PIT 80 M. X 30 M.

GENERAL STRATIGRAPHY:

DEPOSIT # 012306

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-32-005-14W	250000	70	75000	PRIVATE/PRIVATE	
SE-05-006-14W	70000	80	14000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		89000		

EXPOSURE INFORMATION

EXPOSURE #: BB110 (SE-05-006-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: MEDIUM SAND
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: 2.0 M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-2.5 M. MEDIUM SAND, OCCASIONAL PEBBLE, HORIZONTALLY BEDDED

EXPOSURE #: RY467 (NE-32-005-14W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 1.5 M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE:
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
REVEGETATED AND OVERGROWN WITH TREES, 500 CUBIC METRES REMOVED

DEPOSIT # 012307

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-07-006-13W	15000	90	1500	PRIVATE/PRIVATE	
NW-01-006-14W	287500	10	258750	PRIVATE/PRIVATE	
NE-02-006-14W	725000	50	362500	PRIVATE/PRIVATE	
NW-02-006-14W	12500	0	12500	PRIVATE/PRIVATE	
NE-11-006-14W	65000	10	58500	PRIVATE/PRIVATE	
SE-11-006-14W	1412500	15	1200625	PRIVATE/PRIVATE	
SW-11-006-14W	20000	90	2000	PRIVATE/PRIVATE	
NE-12-006-14W	375000	70	112500	PRIVATE/PRIVATE	
NW-12-006-14W	687500	45	378125	PRIVATE/PRIVATE	
SE-12-006-14W	980000	0	980000	PRIVATE/PRIVATE	
SW-12-006-14W	1230000	10	1107000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		4474000		

EXPOSURE INFORMATION

EXPOSURE #: BB119 (NW-12-006-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL VENEER OVER TILL
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-1.2 M. COARSE PEBBLE GRAVEL
1.2-4.0 M. SILTY TILL

EXPOSURE #: RY459 (NE-02-006-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER TILL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: TILL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PIT PARTIALLY REHABILITATED WITH 0.0-0.5 M. SOIL
SIDES SLOPED, NO REAL PIT FACE 0.5-3.0 M. MASSIVE SANDY PEBBLE GRAVEL
3.0 SILTY TILL

EXPOSURE #: RY460 (SE-11-006-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 3.0 M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
20 000 CUBIC METRES REMOVED, SMALL STOCKPILES OF GREATER THAN 2.5 CM. MATERIAL, NORTH PIT 25 M. X 200 M., WEST PIT 150 M. X 220 M. WATER TABLE AT BASE OF PIT
0.0-0.5 M. SOIL
0.5-3.0 M. PEBBLE GRAVEL, MASSIVE, SILTY

EXPOSURE #: RY461 (NE-02-006-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE:
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
REVEGETATED PIT, 20 000 CUBIC METRES REMOVED, SHALE RICH

EXPOSURE #: RY562 (NW-12-006-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: SILT VENEER OVER PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY564 (SW-12-006-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY459 A (NE-02-006-14W)		100	99	93	85	74	62	49	34	20	16	15	SPARSE
RY460 A (SE-11-006-14W)		100	95	82	64	44	30	20	16	13	12	12	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY460 A	12	29	1	58	39	SHALE 4.7-9.5 MM. = N/A
RY459 A	27	27	2	43	30	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012308

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-07-006-13W	138000	5	131100	PRIVATE/PRIVATE	
SW-07-006-13W	42000	5	39900	PRIVATE/PRIVATE	
NE-12-006-14W	24000	85	3600	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		174600		

EXPOSURE INFORMATION

EXPOSURE #: RY462 (NE-12-006-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.7 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.7 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.2 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAME AS IN PIT WALL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
5 000 CUBIC METRES REMOVED, SMALL 0.0-0.5 M. SOIL
PILES OVERSIZE 0.5-1.7 M. MASSIVE SILTY PEBBLE GRAVEL

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY462 A (NE-12-006-14W)		100	98	88	72	56	41	27	18	14	13	13	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY462 A	29	22	0	49	31	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012309

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-07-006-13W	70000	5	66500	PRIVATE/PRIVATE	
SW-08-006-14W	40000	5	38000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		104500		

EXPOSURE INFORMATION

EXPOSURE #: BB112 (SW-08-006-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER SILTY TILL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.1 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.5 M. SOIL
0.5-1.5 M. COARSE PEBBLE GRAVEL (RY561)
1.5-2.0 M. BACKHOE, PEBBLE GRAVEL
2.0-4.0 M. SILTY TILL

EXPOSURE #: RY561 (SW-08-006-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
NORTH DIPPING BEDDED PEBBLE GRAVEL,
CARBONATE INCRUSTATIONS

SIEVE ANALYSIS

		PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY561 A (SW-08-006-13W)		99	97	90	68	48	31	21	15	12	10	9	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY561 A	8	52	0	41	25	SHALE 4.7-9.5 MM. = 34%

DEPOSIT # 012310

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-07-006-13W	67500	95	3375	PRIVATE/PRIVATE	
NE-08-006-13W	37500	0	37500	PRIVATE/PRIVATE	
NW-08-006-13W	135000	60	54000	PRIVATE/PRIVATE	
NW-17-006-13W	180000	0	180000	PRIVATE/PRIVATE	
SE-17-006-13W	435000	0	435000	PRIVATE/PRIVATE	
SW-17-006-13W	2560000	0	2560000	PRIVATE/PRIVATE	
NE-18-006-13W	45000	0	45000	PRIVATE/PRIVATE	
SE-18-006-13W	2120000	5	2014000	PRIVATE/PRIVATE	
SW-18-006-13W	507500	20	406000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		5734875		

EXPOSURE INFORMATION

EXPOSURE #: BB114 (SW-17-006-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: SHALE RICH COARSE PEBBLE GRAVEL
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-4.0 M. SHALE RICH COARSE PEBBLE GRAVEL, HORIZONTALLY BEDDED

EXPOSURE #: RY463 (SE-18-006-13W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PIT OVERGROWN WITH GARBAGE IN PIT 0.0-0.5 M. SOIL
BOTTOM, 2 000 CUBIC METRES 0.5-3.5 M. BEDDED PEBBLE SAND, SHALE RICH
REMOVED, HIGH SHALE

EXPOSURE #: RY556 (NW-17-006-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
90% SHALE ANGULAR FRIABLE CLASTS

EXPOSURE #: RY557 (SW-17-006-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SHALE RICH

EXPOSURE #: RY558 (SW-17-006-13W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.3 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 0.3 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SHALE RICH

EXPOSURE #: RY559 (SW-17-006-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLY GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB114 A (SW-17-006-13W)	100	92	73	58	45	35	26	20	16	14	14	MODERATE
RY463 A (SE-18-006-13W)	100	99	92	77	57	41	27	17	12	10	10	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB114 A	11	0	4	85	81	SHALE 4.7-9.5 MM. = 76%
RY463 A	15	3	0	82	80	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012311

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-16-006-13W	610000	20	488000	PRIVATE/PRIVATE	
SE-20-006-13W	612500	40	367500	PRIVATE/PRIVATE	
SW-21-006-13W	105000	10	94500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		950000		

EXPOSURE INFORMATION

EXPOSURE #: BB115 (SW-21-006-13W)
EXPOSURE TYPE: BACKHOE TEST PIT
ECONOMIC THICKNESS: 4.0 METRES
SECTION: A MATERIAL DESCRIPTION: SHALE RICH MEDIUM-FINE SAND
SECTION HEIGHT: 4.0 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
UNECONOMIC SHALE RICH SAND

VISITED: 9005
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: PASTURE, GRAZING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: M.
OVERBURDEN THICKNESS: 0.2 M.

GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-3.0 M. SHALEY MEDIUM-FINE SAND, OCCASIONAL SHALE PEBBLE, POOR HORIZONTAL BEDDING
3.0-4.0 M. MEDIUM GRAINED SHALE RICH SAND

EXPOSURE #: RY560 (SW-21-006-13W)
EXPOSURE TYPE: DITCH OR ROAD CUT
ECONOMIC THICKNESS: 2.0 METRES
SECTION: A MATERIAL DESCRIPTION: SHALE RICH SAND
SECTION HEIGHT: 2.0 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
MEDIUM GRAINED SHALE RICH (>90%) SAND

VISITED: 8907
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: M.
OVERBURDEN THICKNESS: 0.0 M.

GENERAL STRATIGRAPHY:

DEPOSIT # 012312

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-19-006-13W	60000	90	6000	PRIVATE/PRIVATE	
SW-20-006-13W	90000	0	90000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		96000		

EXPOSURE INFORMATION

EXPOSURE #: RY555 (SW-20-006-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLE GRAVEL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
98% SHALE, REWORKED BEDROCK,

DEPOSIT # 012313

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-12-006-13W	700000	30	490000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		490000		

EXPOSURE INFORMATION

EXPOSURE #: RY430 (SE-12-006-13W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 6.0 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: PEBBLY GRAVEL
SECTION HEIGHT: 6.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 5.0 M. OVERBURDEN THICKNESS: 1.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
30 000 CUBIC METRES REMOVED 0.0-1.0 M. SHALE RICH SILTY TILL
1.0-6.0 M. PEBBLE GRAVEL, MASSIVE COARSE PEBBLES AND COBBLES

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY430 A (SE-12-006-13W)		99	95	84	70	55	41	28	21	16	13	11	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY430 A	88	0	0	11	6	SHALE 4.7-9.5 MM. = 21%

DEPOSIT # 012314

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-36-005-14W	52500	50	26250	PRIVATE/PRIVATE	
NW-36-005-14W	180000	5	171000	PRIVATE/PRIVATE	
SE-01-006-14W	70000	10	63000	PRIVATE/PRIVATE	
SW-01-006-14W	180000	10	162000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		422250		

EXPOSURE INFORMATION

EXPOSURE #: RY565 (SW-01-006-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILTY PEBBLY SAND
SECTION HEIGHT: 5.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
MASSIVE SILT RICH PEBBLY SAND 0.0-0.5 M. SOIL
OVERLAIN BY POORLY BEDDED PEBBLY 0.5-1.5 M. PEBBLY SILT WITH OCCOSIONAL SAND AND
SILT GRAVEL LENS, POORLY BEDDED
1.5-5.5 M. OCCASIONAL SAND LENS

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY565 A (SW-01-006-14W)		100	100	96	84	69	57	46	35	25	16	13	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY565 A	30	0	0	70	59	SHALE 4.7-9.5 MM. = 60%

DEPOSIT # 012315

	INITIAL LOCATION (m^3)	PERCENT RESERVES	REMAINING DEPLETED (m^3)	RESERVES (SURFACE/GRAVEL)	OWNEROWNER 2 (SURFACE/GRAVEL)
SW-36-005-14W	30000	30	21000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		21000		

DEPOSIT # 012316

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-35-005-14W	40000	70	12000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		12000		

EXPOSURE INFORMATION

EXPOSURE #: RY573 (SE-35-005-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLY SAND
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY574 (NE-26-005-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLY SAND OVER TILL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SAND VENEER OVER TILL

DEPOSIT # 012317

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-26-005-14W	5000	99	50	PRIVATE/PRIVATE	
SE-35-005-14W	110000	20	88000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		88050		

EXPOSURE INFORMATION

EXPOSURE #: RY572 (SE-35-005-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY FINE SAND
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

DEPOSIT # 012318

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-35-005-13W	130000	5	123500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		123500		

EXPOSURE INFORMATION

EXPOSURE #: RY470 (SW-35-005-13W) VISITED: 8907
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
POOR EXPOSURE IN OLD DUGOUT/ 0.0-0.5 M. SOIL
BORROW PIT 0.5-1.5 M. MASSIVE PEBBLE GRAVEL, DIRTY WITH CLAY AND SOIL

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY470 A (SW-35-005-13W)		100	95	89	79	65	52	39	26	19	17	16	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY470 A	41	22	3	34	21	SHALE 4.7-9.5 MM. = 50%

DEPOSIT # 012319

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-27-005-13W	90000	10	81000	PRIVATE/PRIVATE	
SE-28-005-13W	37500	10	33750	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		114750		

EXPOSURE INFORMATION

EXPOSURE #: RY585 (SW-27-005-13W) VISITED: 8908
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLY SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SMALL BORROW PIT/ROADCUT, 10 CUBIC METRES REMOVED

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY585 A (SW-27-005-13W)		100	100	99	96	86	72	56	39	23	17	15	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY585 A	0	5	0	95	86	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012320

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-15-005-13W	15000	70	4500	PRIVATE/PRIVATE	
NE-16-005-13W	390000	5	370500	PRIVATE/PRIVATE	
NW-16-005-13W	247000	5	234650	PRIVATE/PRIVATE	
SE-20-005-13W	71500	5	67925	PRIVATE/PRIVATE	
SE-21-005-13W	90000	5	85500	PRIVATE/PRIVATE	
SW-21-005-13W	270000	5	256500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1019575		

EXPOSURE INFORMATION

EXPOSURE #: RY583 (NW-16-005-13W) VISITED: 8908
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY FINE SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SHALE RICH

EXPOSURE #: RY584 (NW-15-005-13W) VISITED: 8908
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND OVER SILT OVER SHALE
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: BEDROCK
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-1.3 M. SHALE RICH PEBBLE SAND
1.3-3.0 M. SILT
3.0-4.0 M. SHALE BEDROCK

DEPOSIT # 012321

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-19-004-13W	20000	0	20000	PRIVATE/PRIVATE	
NW-19-004-13W	20000	0	20000	PRIVATE/PRIVATE	
NW-29-004-13W	25000	0	25000	PRIVATE/PRIVATE	
NE-30-004-13W	100000	0	100000	PRIVATE/PRIVATE	
NW-30-004-13W	295000	0	295000	PRIVATE/PRIVATE	
SW-30-004-13W	180000	30	126000	PRIVATE/PRIVATE	
NE-31-004-13W	2112000	0	2112000	PRIVATE/PRIVATE	
NW-31-004-13W	2112000	10	1900800	PRIVATE/PRIVATE	
SE-31-004-13W	1240000	5	1178000	PRIVATE/PRIVATE	
SW-31-004-13W	825000	0	825000	PRIVATE/PRIVATE	
NE-32-004-13W	95000	0	95000	PRIVATE/PRIVATE	
NW-32-004-13W	1270000	0	1270000	PRIVATE/PRIVATE	
SW-32-004-13W	780000	0	780000	PRIVATE/PRIVATE	
NE-13-004-14W	504000	0	504000	PRIVATE/PRIVATE	
NE-13-004-14W	112000	0	112000	PRIVATE/PRIVATE	
NW-13-004-14W	504000	0	504000	PRIVATE/PRIVATE	
NE-14-004-14W	547500	5	520125	PRIVATE/PRIVATE	
NE-23-004-14W	1071000	0	1071000	PRIVATE/PRIVATE	
NW-23-004-14W	348500	40	209100	PRIVATE/PRIVATE	

SE-23-004-14W	900000	0	900000	PRIVATE/PRIVATE
NE-24-004-14W	1100000	0	1100000	PRIVATE/PRIVATE
NW-24-004-14W	2368000	15	2012800	PRIVATE/PRIVATE
SE-24-004-14W	630000	10	567000	PRIVATE/PRIVATE
SW-24-004-14W	922500	0	922500	PRIVATE/PRIVATE
NE-25-004-14W	1280000	35	832000	PRIVATE/PRIVATE
NW-25-004-14W	1280000	0	1280000	PRIVATE/PRIVATE
SE-25-004-14W	2368000	0	2368000	PRIVATE/PRIVATE
SW-25-004-14W	2368000	15	2012800	PRIVATE/PRIVATE
NE-26-004-14W	580000	20	464000	PRIVATE/PRIVATE
NW-26-004-14W	17000	10	15300	PRIVATE/PRIVATE
SE-26-004-14W	1920000	0	1920000	PRIVATE/PRIVATE
SW-26-004-14W	289000	0	289000	PRIVATE/PRIVATE
NE-35-004-14W	5000	0	5000	PRIVATE/PRIVATE
SE-35-004-14W	300000	20	240000	PRIVATE/PRIVATE
NE-36-004-14W	832000	0	832000	PRIVATE/PRIVATE
NW-36-004-14W	793000	0	793000	PRIVATE/PRIVATE
SE-36-004-14W	640000	0	640000	PRIVATE/PRIVATE
SW-36-004-14W	640000	5	608000	PRIVATE/PRIVATE
NW-03-005-13W	277500	0	277500	PRIVATE/PRIVATE
NE-04-005-13W	367500	0	367500	PRIVATE/PRIVATE
NW-04-005-13W	120000	40	72000	PRIVATE/PRIVATE
NE-05-005-13W	1920000	0	1920000	PRIVATE/PRIVATE
NW-05-005-13W	2048000	5	1945600	PRIVATE/PRIVATE
SE-05-005-13W	480000	0	480000	PRIVATE/PRIVATE
SW-05-005-13W	960000	0	960000	PRIVATE/PRIVATE
NE-06-005-13W	640000	10	576000	PRIVATE/PRIVATE
NW-06-005-13W	625000	0	625000	PRIVATE/PRIVATE
SE-06-005-13W	1792000	0	1792000	PRIVATE/PRIVATE
SW-06-005-13W	1792000	0	1792000	PRIVATE/PRIVATE
NE-07-005-13W	675000	30	472500	PRIVATE/PRIVATE
SE-07-005-13W	952500	0	952500	PRIVATE/PRIVATE
SW-07-005-13W	300000	0	300000	PRIVATE/PRIVATE
NE-08-005-13W	1280000	20	1024000	PRIVATE/PRIVATE
NW-08-005-13W	1280000	25	960000	PRIVATE/PRIVATE
SE-08-005-13W	2240000	15	1904000	PRIVATE/PRIVATE
SW-08-005-13W	2240000	5	2128000	PRIVATE/PRIVATE
NE-09-005-13W	1330000	0	1330000	PRIVATE/PRIVATE
NW-09-005-13W	1792000	15	1523200	PRIVATE/PRIVATE
SE-09-005-13W	1680000	0	1680000	PRIVATE/PRIVATE
SW-09-005-13W	2240000	0	2240000	PRIVATE/PRIVATE
SW-10-005-13W	380000	0	380000	PRIVATE/PRIVATE
NE-16-005-13W	210000	0	210000	PRIVATE/PRIVATE
NW-16-005-13W	615000	0	615000	PRIVATE/PRIVATE
SE-16-005-13W	1410000	15	1198500	PRIVATE/PRIVATE
SW-16-005-13W	1920000	10	1728000	PRIVATE/PRIVATE
NE-17-005-13W	1435000	0	1435000	PRIVATE/PRIVATE
NW-17-005-13W	2170000	0	2170000	PRIVATE/PRIVATE
SE-17-005-13W	2065000	5	1961750	PRIVATE/PRIVATE
SW-17-005-13W	1890000	0	1890000	PRIVATE/PRIVATE
NE-18-005-13W	195000	0	195000	PRIVATE/PRIVATE
SE-18-005-13W	90000	1	89100	PRIVATE/PRIVATE
SW-20-005-13W	540000	30	378000	PRIVATE/PRIVATE
NE-01-005-14W	228000	0	228000	PRIVATE/PRIVATE

NW-01-005-14W	12500	0	12500	PRIVATE/PRIVATE
SE-01-005-14W	768000	0	768000	PRIVATE/PRIVATE
SW-01-005-14W	1200000	20	960000	PRIVATE/PRIVATE
	DEPOSIT RESERVES		69009075	

EXPOSURE INFORMATION

EXPOSURE #: BB088 (NE-36-004-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SILT
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-1.5 M. SILT AND VERY FINE SAND
1.5-3.5 M. SILT, SHALE PEBBLES AT 3.5 M.

EXPOSURE #: BB089 (NW-31-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.3 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL HIGH SHALE
SECTION HEIGHT: 0.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE:
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-2.0 M. PEBBLE GRAVEL
2.0-3.0 M. COBBLY PEBBLE GRAVEL, HIGH SHALE
3.0-3.5 M. SANDY TILL

EXPOSURE #: BB090 (SE-08-005-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 3.8 M. DEPTH TO WATER TABLE: 3.5 M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-3.0 M. PEBBLY COARSE SAND
3.0-3.5 M. SILTY PEBBLY SAND
3.5-3.8 M. SILTY PEBBLY SAND, SHALE RICH

EXPOSURE #: BB091 (NE-08-005-13W)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 2.8 METRES
SECTION: A MATERIAL DESCRIPTION: SILTY FINE SAND
SECTION HEIGHT: 3.8 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:

VISITED: 9005
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: M.
OVERBURDEN THICKNESS: 1.0 M.

GENERAL STRATIGRAPHY:
0.0-1.0 M. SOIL
1.0-3.8 M. SILTY FINE SAND, OCCASIONAL BED OF MEDIUM SAND

EXPOSURE #: BB092 (NW-17-005-13W)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 3.5 METRES
SECTION: A MATERIAL DESCRIPTION: FINE SAND
SECTION HEIGHT: 3.7 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
AT BASE OF RY580

VISITED: 9005
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: 3.2 M.
OVERBURDEN THICKNESS: 0.0 M.

GENERAL STRATIGRAPHY:
0.0-3.2 M. FINE SAND PEBBLE FREE, BEDS DIPPING TO NORTHEAST
3.2-3.5 M. PEBBLE GRAVEL
3.5-3.7 M. SILTY TILL

EXPOSURE #: BB099 (NW-24-004-14W)
EXPOSURE TYPE: BACKHOE TEST PIT

ECONOMIC THICKNESS: 4.0 METRES
SECTION: A MATERIAL DESCRIPTION: FINE SAND BEDDED
SECTION HEIGHT: 4.0 M.
HEIGHT SAMPLED: 2.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:

VISITED: 9005
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: M.
OVERBURDEN THICKNESS: 0.3 M.

GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-1.2 M. SILTY FINE SAND, PEBBLE FREE
1.2-4.0 M. BEDDED FINE SAND

EXPOSURE #: BB100 (SW-24-004-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.4 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER TILL
SECTION HEIGHT: 3.8 M. DEPTH TO WATER TABLE: 1.7 M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
UNECONOMIC, HIGH SILT AND SHALE CONTENT
0.0-0.3 M. SOIL
0.3-1.7 M. COBBLY PEBBLE GRAVEL, HIGH SILT AND SHALE
1.7-3.8 M. SILTY TILL

EXPOSURE #: RY447 (NW-13-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: COARSE SAND AND GRANULES
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY453 (SW-01-005-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL AND SAND
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
5 000 CUBIC METRES REMOVED, EAST SIDE OF PIT FINE SAND, WEST SIDE PEBBLE GRAVEL AND SAND
0.0-1.5 M. MASSIVE PEBBLE GRAVEL
1.5-2.5 M. HORIZONTALLY BEDDED PEBBLE SAND

EXPOSURE #: RY468 (SE-18-005-13W) VISITED: 8907
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY FINE SAND
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 3.0 M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
FINE SAND WITH OCCASIONAL PEBBLES, BORROW PIT, HIGH SHALE
0.0-0.5 M. SOIL
0.5-3.0 M. FINE SAND WITH OCCASIONAL PEBBLE, NO BEDDING

EXPOSURE #: RY488 (SE-31-004-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL AND COARSE SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: 2.0 M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE:
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PIT INACTIVE AND OVERGROWN WITH
TREES, 800 CUBIC METRES REMOVED, HIGH
SILT AND SHALE, POOR EXPOSURE

EXPOSURE #: RY501 (SW-24-004-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY502 (NW-13-004-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: COBBLY PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BA: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
COARSE DIRTY GRAVEL WITH HIGH SHALE

EXPOSURE #: RY506 (SW-26-004-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 1.7 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND AND SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.7 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
BORROW PIT 5 CUBIC METRES REMOVED, 0.0-0.3 M. SOIL
PEBBLES SHOW 100 % SHALE 0.3-2.0 M. PEBBLE SAND

EXPOSURE #: RY507 (SW-36-004-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SAND WITH PEBBLES
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY509 (NE-31-004-13W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.5 M. SHALE RICH PEBBLE GRAVEL

EXPOSURE #: RY510 (NW-31-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 0.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HIGH SHALE

EXPOSURE #: RY511 (NW-08-005-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGPAPHY:
SHALE RICH PEBBLE GRAVEL

EXPOSURE #: RY512 (SW-16-005-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: MEDIUM SAND OCCASIONAL PEBBLE
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY513 (SE-08-005-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY514 (SW-10-005-13W) VISITED: 8907
EXPOSURE TYPE: HAND/POWER AUGER HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: FINE SAND
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY524 (NW-29-004-13W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLE GRAVEL SHALE RICH
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY579 (SW-17-005-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SHALE RICH SANDY PEBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HIGH SHALE

EXPOSURE #: RY580 (NW-17-005-13W) VISITED: 8908
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.8 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND OVER FINE SAND
SECTION HEIGHT: 1.8 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
BORROW PIT/ROADCUT, 2 CUBIC METRES REMOVED, POOR QUALITY
0.0-0.5 M. SOIL AND SILT
0.5-1.8 M. PEBBLY SAND HIGH SHALE
1.8-2.0 M. HAND DUG HOLE, FINE SAND, OCCASIONAL PEBBLE

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB089 A (NW-31-004-13W)		100	94	80	66	55	48	41	31	19	16	15	SPARSE
BB090 A (SE-08-005-13W)		100	98	90	78	69	59	46	30	19	16	16	SPARSE
RY453 A (SW-01-005-14W)		100	99	91	78	65	52	38	25	14	8	7	SPARSE
RY468 A (SE-18-005-13W)		100	100	97	93	86	78	69	52	22	15	14	SPARSE
RY506 A (SW-26-004-14W)		100	96	88	80	69	58	44	28	18	15	14	SPARSE
RY580 A (NW-17-005-13W)		100	100	98	93	86	76	63	46	28	18	17	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY453 A	15	4	0	81	93	SHALE 4.7-9.5 MM. = N/A
RY506 A	5	0	0	95	83	SHALE 4.7-9.5 MM. = N/A
BB089 A	1	0	3	96	97	SHALE 4.7-9.5 MM. = 95%
BB090 A	17	0	5	78	64	SHALE 4.7-9.5 MM. = 42%
RY468 A	10	27	1	62	55	SHALE 4.7-9.5 MM. = N/A
RY580 A	5	5	0	90	91	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012322

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-01-005-14W	260000	2	254800	PRIVATE/PRIVATE	
SW-12-005-14W	40000	0	40000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		294800		

EXPOSURE INFORMATION

EXPOSURE #: RY458 (NW-01-005-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL AND SAND
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 1.5 M.
MATERIAL AT BASE: SILT
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
ROADCUT ON LONG RIDGE, ESKER WITH SHARP DEPOSITIONAL SEDIMENTS VARYING FROM SAND, PEBBLES, AND SILTY TILL LENS, UNECONOMIC DUE TO HIGH SILT FINE SAND CONTENT

GENERAL STRATIGRAPHY:
0.0-1.5 M. BEDDED SILT WITH GRAVEL LENSES
1.5-3.5 M. BEDDED PEBBLES AND BEDDED MEDIUM TO FINE SAND
3.5-5.0 M. SILTY FINE SAND

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY458 A (NW-01-005-14W)		100	98	91	80	69	58	49	39	30	24	21	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY458 A	31	0	1	69	59	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012323

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-01-005-14W	110000	0	110000	PRIVATE/PRIVATE	
SE-12-005-14W	20000	0	20000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		130000		

DEPOSIT # 012324

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-09-005-14W	90000	0	90000	PRIVATE/PRIVATE	
NW-09-005-14W	90000	0	90000	PRIVATE/PRIVATE	
SE-09-005-14W	180000	0	180000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		360000		

DEPOSIT # 012325

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-09-005-14W	187500	0	187500	PRIVATE/PRIVATE	
NW-10-005-14W	425000	0	425000	PRIVATE/PRIVATE	
SW-10-005-14W	275000	5	261250	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		873750		

EXPOSURE INFORMATION

EXPOSURE #: BB103 (SE-09-005-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.3 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-4.0 M. PEBBLY SAND, MASSIVE

EXPOSURE #: RY457 (SW-10-005-14W) VISITED: 8906
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
VERY HIGH SHALE, POOR QUALITY 0.0-0.5 M. SOIL
0.5-2.5 M. PEBBLY SAND

EXPOSURE #: RY542 (SW-10-005-14W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLE GRAVEL
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HIGH SHALE

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB103 A (SE-09-005-14W)		100	99	87	77	64	51	39	30	21	16	15	SPARSE
RY457 A (SW-10-005-14W)		100	98	90	74	55	36	20	13	11	10	10	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY457 A	5	4	0	91	69	SHALE 4.7-9.5 MM. = N/A
BB103 A	2	0	3	95	88	SHALE 4.7-9.5 MM. = 64%

DEPOSIT # 012326

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-03-005-14W	25000	0	25000	PRIVATE/PRIVATE	
NW-03-005-14W	200000	0	200000	PRIVATE/PRIVATE	
SE-03-005-14W	112500	0	112500	PRIVATE/PRIVATE	
SW-10-005-14W	50000	0	50000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		387500		

EXPOSURE #: RY543 (SW-10-005-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: MEDIUM SAND OVER PEBBLY SAND
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

DEPOSIT # 012327

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SE-33-004-14W	115000	20	92000	PRIVATE/PRIVATE	
SW-34-004-14W	5000	0	5000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		97000		

EXPOSURE INFORMATION

EXPOSURE #:RY454 (SE-33-004-14W)VISITED:8906

EXPOSURE TYPE: SAND AND GRAVEL PIT — LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)

SURROUNDING LAND USE: AGRICULTURE, HAYING

ECONOMIC THICKNESS: 1.0 METRES — ESTIMATED STONE CONTENT:MEDIUM LOW

SECTION: A — MATERIAL DESCRIPTION: PEBBLE GRAVEL

SECTION HEIGHT: 1.5 M. — DEPTH TO WATER TABLE: M.

HEIGHT SAMPLED: 1.0 M. — OVERBURDEN THICKNESS: 0.5 M.

MATERIAL AT BASE: SAND AND GRAVEL

SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

ADDITIONAL INFORMATION: — GENERAL STRATIGRAPHY:

LOCAL BORROW PIT, 500 CUBIC METRES REMOVED — 0.0-0.5 M. SOIL

0.5-1.5 M. PEBBLE GRAVEL, MASSIVE, POOR EXPOSURE

SIEVE ANALYSIS

		PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY454 A (SE-33-004-14W)		100	99	86	65	51	41	32	23	15	11	9	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY454 A	51	9	0	40	17	SHALE 4.7-9.5 MM. = 33%

DEPOSIT # 012328

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-27-004-13W	300000	0	300000	PRIVATE/PRIVATE	
NE-28-004-13W	330000	0	330000	PRIVATE/PRIVATE	
NW-28-004-13W	90000	0	90000	PRIVATE/PRIVATE	
SE-28-004-13W	330000	0	330000	PRIVATE/PRIVATE	
NE-32-004-13W	140000	0	140000	PRIVATE/PRIVATE	
NW-33-004-13W	437500	0	437500	PRIVATE/PRIVATE	
SE-33-004-13W	90000	0	90000	PRIVATE/PRIVATE	
SW-33-004-13W	210000	0	210000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1927500		

EXPOSURE INFORMATION

EXPOSURE #: BB084 (SW-27-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SILTY SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 1.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.5 M. DISTURBED SOIL
0.5-1.0 M. SOIL
1.0-4.0 M. PEBBLY SILTY SAND

EXPOSURE #: BB087 (NW-33-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SILT PEBBLE FREE
SECTION HEIGHT: 3.8 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SHALE PEBBLES AT 3.8 M.

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB084 A (SW-27-004-13W)		100	100	96	92	83	74	66	54	27	19	16	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB084 A	43	0	4	53	29	SHALE 4.7-9.5 MM. = 49%

DEPOSIT # 012329

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-25-004-13W	30000	0	30000	PRIVATE/PRIVATE	
NE-26-004-13W	390000	0	390000	PRIVATE/PRIVATE	
NW-26-004-13W	30000	0	30000	PRIVATE/PRIVATE	
SE-26-004-13W	45000	0	45000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		495000		

EXPOSURE INFORMATION

EXPOSURE #: RY483 (NE-26-004-13W) VISITED: 8907
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE:
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
VERGROWN BORROW PIT, INACTIVE,
100 CUBIC METRES REMOVED, POOR
ACCESS IN CENTER OF FIELD

DEPOSIT # 012330

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-19-004-12W	50000	0	50000	PRIVATE/PRIVATE	
NE-24-004-13W	212500	0	212500	PRIVATE/PRIVATE	
NW-24-004-13W	125000	0	125000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		387500		

EXPOSURE INFORMATION

EXPOSURE #: RY526 (NW-21-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE-MEDIUM SAND
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY527 (NE-24-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILTY SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SILT
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
1.5 M. HIGH X 15 M. SAND FLANKED BY SILT,
UNECONOMIC

SIEVE ANALYSIS

		PERCENT PASSING										
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY526 A (NW-21-004-13W)		100	100	100	100	100	100	99	95	62	20	13	SPARSE
RY527 A (NE-24-004-13W)		100	100	99	95	91	81	66	51	37	30	26	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY527 A	-	-	-	-	-	SHALE 4.7-9.5 MM. = 74%

DEPOSIT # 012331

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-20-004-13W	440000	0	440000	PRIVATE/PRIVATE	
NE-21-004-13W	264000	0	264000	PRIVATE/PRIVATE	
NW-21-004-13W	572000	30	400400	PRIVATE/PRIVATE	
SW-28-004-13W	55000	0	55000	PRIVATE/PRIVATE	
SE-29-004-13W	11000	0	11000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1170400		

EXPOSURE INFORMATION

EXPOSURE #: BB083 (SW-28-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SILT OVER SANDY SILTY TILL
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-2.5 M. SILT AND VERY FINE SAND
2.5-3.5 M. SILTY TILL

EXPOSURE #: RY525 (NE-20-004-13W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: MEDIUM SAND
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
1.0 M. FINE SAND GRADING TO MEDIUM SAND AT 1.0 M.

DEPOSIT # 012332

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-20-004-13W	5000	0	5000	PRIVATE/PRIVATE	
NW-29-004-13W	40000	0	40000	PRIVATE/PRIVATE	
SW-29-004-13W	90000	20	72000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		117000		

EXPOSURE INFORMATION

EXPOSURE #: BB086 (NW-29-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.7 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE SAND VENEER OVER SILT
SECTION HEIGHT: 3.8 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:

GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-1.0 M. PEBBLY SAND
1.0-3.2 M. SILT AND FINE SAND
3.2-3.8 M. MEDIUM GRAINED SAND, OCCASIONAL PEBBLE

EXPOSURE #: RY523 (NW-29-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILT OVER FINE SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:

GENERAL STRATIGRAPHY:
0.0-0.5 M. SOIL
0.5-1.5 M. SILT AND VERY FINE SAND
1.5-2.0 M. FINE TO MEDIUM SAND

DEPOSIT # 012333

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-17-004-13W	285000	0	285000	PRIVATE/PRIVATE	
NE-19-004-13W	660000	60	264000	PRIVATE/PRIVATE	
SE-19-004-13W	60000	95	3000	PRIVATE/PRIVATE	
NW-20-004-13W	375000	0	375000	PRIVATE/PRIVATE	
SE-20-004-13W	195000	0	195000	PRIVATE/PRIVATE	
SW-20-004-13W	825000	0	825000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1947000		

EXPOSURE INFORMATION

EXPOSURE #: BB082 (NE-17-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SILT PEBBLE FREE
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.0 M.
MATERIAL AT BASE: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY482 (NE-19-004-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 6.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: MEDIUM SAND WITH OCCASIONAL PEBBLES
SECTION HEIGHT: 6.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 4.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
MASSIVE TO POORLY BEDDED MEDIUM-
FINE SAND WITH OCCOSIONAL PEBBLES,
500 CUBIC METRES REMOVED,
INACTIVE

EXPOSURE #: RY505 (SW-20-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY FINE SAND
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY522 (SE-20-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILT
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BA: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY482 A (NE-19-004-13W)		100	97	94	90	87	79	61	38	19	15	13	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

DEPOSIT # 012334

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-18-004-13W	25000	0	25000	PRIVATE/PRIVATE	
SW-19-004-13W	825000	60	330000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		355000		

EXPOSURE INFORMATION

EXPOSURE #: RY503 (NW-18-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER TILL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY504 (SW-19-004-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 4.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: TILL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
POORLY BEDDED MASSIVE TO
HORIZONTALLY BEDDED COARSE SAND
WITH PEBBLES, PIT 20 M. X 15 M.

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY504 A (SW-19-004-13W)		100	99	95	86	73	56	36	18	11	9	8	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY504 A	14	55	0	31	21	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012335

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-13-004-14W	30000	0	30000	PRIVATE/PRIVATE	
SE-13-004-14W	80000	0	80000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		110000		

DEPOSIT # 012336

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-18-004-13W	440000	65	154000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		154000		

EXPOSURE INFORMATION

EXPOSURE #: BB102 (SW-18-604-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: MEDIUM GRAINED SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-4.0 M. SAND, MEDIUM GRAINED, OCCASIONAL PEBBLE

DEPOSIT # 012337

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-15-004-13W	325000	90	32500	PRIVATE/PRIVATE	
SW-15-004-13W	100000	90	10000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		42500		

EXPOSURE INFORMATION

EXPOSURE #: RY521 (NW-15-004-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND FLANKED BY TILL
SECTION HEIGHT: 6.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
FARMER SAYS AREA MINED BY
MUNICIPALITY, 4 000 CUBIC METRES
REMOVED, POOR QUALITY FINE PEBBLE
SAND AND SILTY TILL, COMPLEX PIT WITH
BEDDED SILT, POORLY BEDDED FLOW TILL
AND MASSIVE SILTY GRAVEL, SILTY TILL HAS
ALSO BEEN MINED, NO ACCESS

DEPOSIT # 012338

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-14-004-13W	37500	0	37500	PRIVATE/PRIVATE	
SE-23-004-13W	112500	0	112500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		150000		

EXPOSURE INFORMATION

EXPOSURE #: RY481 (SE-23-004-13W)
VISITED: 8907
EXPOSURE TYPE: BORROW PIT
LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES
ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILT AND VERY FINE SAND
SECTION HEIGHT: 1.5 M.
DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M.
OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
UNECONOMIC

DEPOSIT # 012339A

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-18-004-12W	210000	0	210000	PRIVATE/PRIVATE	
SE-19-004-12W	280000	0	280000	PRIVATE/PRIVATE	
SW-19-004-12W	50000	0	50000	PRIVATE/PRIVATE	
SW-20-004-12W	142500	0	142500	PRIVATE/PRIVATE	
NE-13-004-13W	270000	0	270000	PRIVATE/PRIVATE	
NW-13-004-13W	180000	0	180000	PRIVATE/PRIVATE	
SW-13-004-13W	15000	0	15000	PRIVATE/PRIVATE	
NE-14-004-13W	125000	0	125000	PRIVATE/PRIVATE	
SE-14-004-13W	115000	0	115000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1387500		

EXPOSURE INFORMATION

EXPOSURE #: RY515 (NW-13-004-13W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: VERY FINE SILTY SAND
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY516 (SW-13-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL AND SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY528 (SE-23-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND AND PEBBLE GRAVEL
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
BORROW PIT, 10 CUBIC METRES REMOVED, 0.0-0.5 M. SOIL
ESKER 0.5-1.5 M. PEBBLY SILT WITH OCCOSIONAL GRAVEL LENS
1.5-3.5 M. MIXTURE OF PEBBLY SAND, SILTY FINE SAND
3.5 M. PEBBLE GRAVEL

EXPOSURE #: RY531 (SW-20-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND PEBBLE FREE
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY528 A (SE-23-004-13W)		100	98	94	87	77	67	56	45	32	23	19	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC AMALYSIS(19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY528 A	57	0	0	43	12	SHALE 4.7-9.5 MM. = 88%

DEPOSIT # 012339B

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-16-004-12W	270000	0	270000	PRIVATE/PRIVATE	
NW-16-004-12W	930000	90	93000	PRIVATE/PRIVATE	
NE-17-004-12W	75000	0	75000	PRIVATE/PRIVATE	
SE-20-004-12W	360000	0	360000	PRIVATE/PRIVATE	
SW-20-004-12W	60000	0	60000	PRIVATE/PRIVATE	
SE-21-004-12W	540000	0	540000	PRIVATE/PRIVATE	
SW-21-004-12W	210000	99	2100	PRIVATE/PRIVATE	
SW-22-004-12W	40000	0	40000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1440100		

EXPOSURE INFORMATION

EXPOSURE #: RY480 (NW-16-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 6.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND OCCASIONAL PEBBLE
SECTION HEIGHT: 6.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 4.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
ESKER RIDGE CONSISTING OF 6 M. VERY
FINE TO FINE HORIZONTALLY BEDDED SAND
WITH OCCOSIONAL PEBBLE BED,
UNECONOMIC, HIGH SHALE IN PEBBLE CLASTS

EXPOSURE #: RY532 (SW-22-004-12W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY533 (SW-21-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY480 A (NW-16-004-12W)		100	100	99	98	93	87	80	72	53	22	12	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

EXPOSURE INFORMATION

EXPOSURE #:RY538 (SE-17-004-12W)VISITED:8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILTY SAND AND PEBBLE SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
POOR QUALITY DUE TO HIGH SILT

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY538 A (SE-17-004-12W)		100	100	98	93	82	69	58	48	37	26	19	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY538 A	69	0	0	31	29	SHALE 4.7-9.5 MM. = 54%

DEPOSIT # 012340

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-16-004-12W	45000	0	45000	PRIVATE/PRIVATE	
NE-17-004-12W	105000	0	105000	PRIVATE/PRIVATE	
SE-17-004-12W	82500	0	82500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		232500		

DEPOSIT # 012341

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-08-004-12W	16000	99	160	PRIVATE/PRIVATE	
NW-09-004-12W	16000	99	160	PRIVATE/PRIVATE	
NW-09-004-12W	16000	99	160	PRIVATE/PRIVATE	
SW-16-004-12W	128000	0	128000	PRIVATE/PRIVATE	
SE-17-004-12W	16000	99	160	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		128640		

EXPOSURE INFORMATION

EXPOSURE #: BB073 (NW-09-004-12W)
EXPOSURE TYPE: BACKHOE TEST PIT
ECONOMIC THICKNESS: 0.0 METRES
SECTION: A MATERIAL DESCRIPTION: SILTY FINE SAND OVER TILL
SECTION HEIGHT: 4.0 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:

VISITED: 9005
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: M.
OVERBURDEN THICKNESS: 0.3 M.

GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-3.0 M. SILTY FINE SAND, OCCOSIONAL PEBBLE
3.0-3.5 M. PEBBLY COARSE SAND
3.5-4.0 M. SILTY TILL

EXPOSURE #: RY539 (SW-16-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE PEBBLE SAND OVER TILL
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

DEPOSIT # 012342

LOCATION	INITIAL RESERVES (m3)	PERCENT DEPLETED	REMAINING RESERVES (m3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-17-004-12W	140000	0	140000	PRIVATE/PRIVATE	
SE-18-004-12W	175000	99	1750	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		141750		

EXPOSURE INFORMATION

EXPOSURE #: RY529 (SE-18-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SAND WITH OCCASIONAL PEBBLE
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 4.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
KAME ? 0.0-0.5 M. SOIL
0.5-5.0 M. TO LEVEL OF ROAD SILTY FINE SAND WITH OCCASIONAL SILT BEDS

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY529 A (SE-18-304-12W)		100	100	99	98	94	89	79	64	38	18	11	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

DEPOSIT # 012343

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
SW-06-005-14W	195000	10	175500	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		175500		

EXPOSURE INFORMATION

EXPOSURE #: RY456 (SW-06-005-14W) VISITED: 8906
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL AND PEBBLE SAND
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PIT IN CENTER OF FARM FIELD, CORE OF HILL APPEARS TO BE TILL WITH SAND AND GRAVEL ON FLANKS
0.0-0.5 M. SOIL
0.5-3.0 M. PEBBLE GRAVEL AND PEBBLE SAND

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY456 A (SW-06-005-14W)		100	96	85	64	47	34	24	19	15	12	11	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY456 A	18	1	0	81	41	SHALE 4.7-9.5 MM. = 59%

DEPOSIT # 012344

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-11-004-13W	647500	20	518000	PRIVATE/PRIVATE	
NW-11-004-13W	262500	0	262500	PRIVATE/PRIVATE	
NE-12-004-13W	30000	0	30000	CROWN(PROVINCIAL)/CROWN	
NW-12-004-13W	402500	0	402500	PRIVATE/PRIVATE	
SE-12-004-13W 4	5000	0	45000	PRIVATE/PRIVATE	
SW-14-004-13W	525000	0	525000	PRIVATE/PRIVATE	
SE-15-004-13W	390000	0	390000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		2173000		

EXPOSURE INFORMATION

EXPOSURE #: BB079 (NE-11-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SILT
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-3.5 M. PEBBLE SAND AND OCCASIONAL SILT LENS
3.5-4.0 M. SILT AND VERY FINE SAND

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB079 A (NE-11-004-13W)		100	100	95	81	68	57	45	33	21	15	14	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB079 A	55	0	21	24	19	SHALE 4.7-9.5 MM. = 25%

DEPOSIT # 012345

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-01-004-14W	25000	0	25000	PRIVATE/PRIVATE	
NW-01-004-14W	180000	0	180000	PRIVATE/PRIVATE	
NE-12-004-14W	1155000	30	808500	PRIVATE/PRIVATE	
NW-12-004-14W	1190000	0	1190000	PRIVATE/PRIVATE	
SE-12-004-14W	90000	0	90000	PRIVATE/PRIVATE	
SW-12-004-14W	175000	0	175000	PRIVATE/PRIVATE	
SE-13-004-14W	180000	30	126000	PRIVATE/PRIVATE	
SW-13-004-14W	120000	30	84000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		2678500		

EXPOSURE INFORMATION

EXPOSURE #: BB101 (SE-13-004-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLE SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-4.0 M. COARSE PEBBLY SAND, MASSIVE

EXPOSURE #: RY452 (NE-12-004-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: 3.5 M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
MOST PEBBLES HAVE CARBONATE
INCRUSTATIONS, 20 000 CUBIC METRES
REMOVED, PIT PARTIALLY REHABILITATED,
NORTH AND WEST END OF PIT FINER SAND

EXPOSURE #: RY500 (SW-12-004-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND OVER TILL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PEBBLY COARSE SAND VENEER 1.0 M. OVER TILL

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB101 A (SE-13-004-14W)		100	98	88	70	50	34	22	16	13	11	11	MODERATE
RY452 A (NE-12-004-14W)		100	97	91	77	60	38	16	10	8	8	7	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY452 A	38	42	0	21	14	SHALE 4.7-9.5 MM. = N/A
BB101 A	20	0	12	68	63	SHALE 4.7-9.5 MM. = 57%

DEPOSIT # 012346

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-02-004-14W	25000	0	25000	PRIVATE/PRIVATE	
SE-11-004-14W	75000	20	60000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		85000		

EXPOSURE INFORMATION

EXPOSURE #: RY499 (SE-11-004-14W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: COBBLY PEBBLE GRAVEL OVER TILL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
GRAVEL VENEER OVER TILL, PIT SLOPED
AND REHABILITATED

DEPOSIT # 012347

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-34-003-14W	1760000	0	1760000	PRIVATE/PRIVATE	
NW-35-003-14W	240000	0	240000	PRIVATE/PRIVATE	
NW-02-004-14W	1080000	15	918000	PRIVATE/PRIVATE	
SW-02-004-14W	1520000	0	1520000	PRIVATE/PRIVATE	
NE-03-004-14W	195000	0	195000	PRIVATE/PRIVATE	
NW-03-004-14W	7500	99	75	PRIVATE/PRIVATE	
SE-03-004-14W	297000	0	297000	PRIVATE/PRIVATE	
NE-10-004-14W	525000	20	420000	PRIVATE/PRIVATE	
SE-10-004-14W	1368500	0	1368500	PRIVATE/PRIVATE	
SW-10-004-14W	11500	0	11500	PRIVATE/PRIVATE	
NW-11-004-14W	540000	0	540000	PRIVATE/PRIVATE	
SW-11-004-14W	839500	0	839500	PRIVATE/PRIVATE	
SW-14-004-14W	427500	5	406125	PRIVATE/PRIVATE	
SE-15-004-14W	7500	5	7125	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		8522825		

EXPOSURE INFORMATION

EXPOSURE #: BB067 (NW-35-003-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLE GRAVEL
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-4.0 M. SHALE RICH PEBBLE GRAVEL, DRY, MASSIVE, PEBBLES SLIGHTLY INCRUSTED

EXPOSURE #: BB097 (SW-11-004-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.3 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILTY FINE SAND OVER TILL
SECTION HEIGHT: 3.8 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.0 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
UNECONOMIC, SAND TOO FINE 0.0-1.0 M. SOIL
1.0-2.8 M. SILTY FINE SAND
2.8-3.3 M. SILTY FINE SAND OCCASIONAL PEBBLE
3.3-3.8 M. SILTY TILL

EXPOSURE #: RY435 (SE-10-004-14W) VISITED: 8906
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
BORROW PIT, 30 CUBIC METRES REMOVED,
ESTIMATED 80% SHALE

EXPOSURE #: RY436 (SE-10-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND PEBBLE FREE
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY441 (SW-14-004-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: COARSE SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: 1.5 M.
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BA: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
2 000 CUBIC METRES REMOVED, PARTIALLY
REVEGATED, SHALE RICH,

EXPOSURE #: RY443 (SE-03-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE-MEDIUM SAND
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PEBBLE FREE

EXPOSURE #: RY444 (SE-03-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: COARSE SANDY GRAVEL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY446 (SW-14-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: COARSE SAND PEBBLE FREE
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB067 A (NW-35-003-14W)	100	98	87	71	48	30	20	17	16	15	15	SPARSE
RY441 A (SW-14-004-14W)	100	99	96	87	78	63	40	24	18	15	14	MODERAT

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY441 A	25	17	0	58	40	SHALE 4.7-9.5 MM. = 50%
BB067 A	4	4	2	89	81	SHALE 4.7-9.5 MM. = 87%

DEPOSIT # 012348

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-03-004-14W	160000	70	48000	PRIVATE/PRIVATE	
NE-04-004-14W	11000	0	11000	PRIVATE/PRIVATE	
SW-10-004-14W	66000	70	19800	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		78800		

EXPOSURE INFORMATION

EXPOSURE #: BB096 (NW-03-004-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.2 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-1.8 M. SILTY TILL
1.8-2.3 M. FINE SAND
2.3-4.0 M. PEBBLY SAND

SIEVE ANALYSIS

		PERCENT PASSING										
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB096 A (NW-03-004-14W)		98	91	82	71	57	45	36	30	22	13	11	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB096 A	39	0	22	39	26	SHALE 4.7-9.5 MM. = 32%

DEPOSIT # 012349

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-03-004-14W	165000	0	165000	PRIVATE/PRIVATE	
NE-04-004-14W	180000	99	1800	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		166800		

EXPOSURE INFORMATION

EXPOSURE #: RY445 (NW-03-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILTY FINE SAND PEBBLE FREE
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

DEPOSIT # 012350

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-33-003-14W	157500	0	157500	PRIVATE/PRIVATE	
SE-04-004-14W	140000	0	140000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		297500		

EXPOSURE INFORMATION

EXPOSURE #: BB066 (NE-33-003-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: 3.5 M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HOLE FILLED IN AT 3.5 M.

EXPOSURE #: RY434 (SE-04-004-14W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: AGRICULTURE, HAYING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY FINE SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB066 A (NE-33-003-14W)		97	91	83	75	68	59	43	17	11	9	9	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB066 A	17	73	8	2	0	SHALE 4.7-9.5 MM. = 10%

DEPOSIT # 012351

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-27-003-14W	12500	0	12500	PRIVATE/PRIVATE	
NE-28-003-14W	350000	40	210000	PRIVATE/PRIVATE	
SE-33-003-14W	1470000	30	1029000	PRIVATE/PRIVATE	
SW-33-003-14W	150000	0	150000	PRIVATE/PRIVATE	
SW-34-003-14W	245000	0	245000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1646500		

EXPOSURE INFORMATION

EXPOSURE #: BB065 (SW-34-003-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: 3.5 M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: TILL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-3.5 M. PEBBLY SAND OCCASIONAL COBBLE, MASSIVE
3.5-3.7 M. SILTY TILL, WATER AT 3.5 M.

EXPOSURE #: RY432 (NE-28-003-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: TILL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
5 000 CUBIC METRES REMOVED, INACTIVE PIT, HIGH SHALE, 2.5 METRES PEBBLY SAND OVER SILTY TILL

EXPOSURE #: RY433 (SE-33-003-14W) VISITED: 8906
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:HIGH
SECTION: A MATERIAL DESCRIPTION: COBBLY GRAVEL
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: 3.5 M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SILT
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
COARSE GRAVEL, HIGH SHALE, INCRUSTATIONS ON PEBBLES

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB065 A (SW-34-003-14W)	100	97	85	75	55	36	22	16	14	13	12	SPARSE
RY432 A (SW-21-004-12W)	98	97	89	71	50	37	27	18	12	10	10	SPARSE
RY433 A (SE-33-003-14W)	98	92	78	61	44	30	20	11	8	7	6	ABUNDANT

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY432 A	7	35	3	55	30	SHALE 4.7-9.5 MM. = 55%
BB065 A	7	22	2	70	64	SHALE 4.7-9.5 MM. = 46%
RY433 A	20	33	2	45	19	SHALE 4.7-9.5 MM. = 18%

DEPOSIT # 012352

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-19-003-13W	1050000	0	1050000	PRIVATE/PRIVATE	
NE-20-003-13W	495000	5	470250	PRIVATE/PRIVATE	
NW-20-003-13W	1925000	0	1925000	PRIVATE/PRIVATE	
NW-29-003-13W	30000	0	30000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		3475250		

EXPOSURE INFORMATION

EXPOSURE #: BB064 (NE-19-003-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HOLE FILLED IN AT 3.0 M., DEPOSIT
DEPTH 7.0 M.

EXPOSURE #: RY497 (NW-20-003-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.5 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HIGH SHALE, CARBONATE INCRUSTATIONS

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB064 A (NE-19-003-13W)		100	99	95	93	85	68	36	17	14	13	12	SPARSE
RY497 A (NW-20-003-13W)		100	97	88	66	50	35	23	16	13	11	11	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY497 A	14	14	0	71	34	SHALE 4.7-9.5 MM. = 52%
BB064 A	17	0	13	70	56	SHALE 4.7-9.5 MM. = 83%

DEPOSIT # 012353

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-18-003-12W	240000	0	240000	PRIVATE/PRIVATE	
NW-18-003-12W	240000	0	240000	PRIVATE/PRIVATE	
NE-19-003-12W	1250000	5	1187500	PRIVATE/PRIVATE	
NW-19-003-12W	410000	20	328000	PRIVATE/PRIVATE	
SE-19-003-12W	1270000	0	1270000	PRIVATE/PRIVATE	
SW-19-003-12W	1240000	0	1240000	PRIVATE/PRIVATE	
NE-20-003-12W	2400000	0	2400000	PRIVATE/PRIVATE	
NW-20-003-12W	2560000	5	2432000	PRIVATE/PRIVATE	
SE-20-003-12W	1240000	0	1240000	PRIVATE/PRIVATE	
SW-20-003-12W	1300000	0	1300000	PRIVATE/PRIVATE	
NE-21-003-12W	400000	0	400000	PRIVATE/PRIVATE	
NW-21-003-12W	1440000	0	1440000	PRIVATE/PRIVATE	
SE-21-003-12W	60000	0	60000	PRIVATE/PRIVATE	
SW-21-003-12W	1320000	15	1122000	PRIVATE/PRIVATE	
NE-29-003-12W	612500	0	612500	PRIVATE/PRIVATE	
NW-29-003-12W	1365000	10	1228500	PRIVATE/PRIVATE	
SE-29-003-12W	800000	0	800000	PRIVATE/PRIVATE	
SW-29-003-12W	2220000	5	2109000	PRIVATE/PRIVATE	
NE-30-003-12W	945000	20	756000	PRIVATE/PRIVATE	
NW-30-003-12W	787500	0	787500	PRIVATE/PRIVATE	
SE-30-003-12W	1470000	0	1470000	PRIVATE/PRIVATE	
SW-30-003-12W	1050000	0	1050000	PRIVATE/PRIVATE	
SE-32-003-12W	857500	0	857500	PRIVATE/PRIVATE	
SW-32-003-12W	17500	0	17500	PRIVATE/PRIVATE	
SE-33-003-12W	220000	95	11000	PRIVATE/PRIVATE	
SW-33-003-12W	1320000	0	1320000	PRIVATE/PRIVATE	
NE-13-003-13W	110000	0	110000	PRIVATE/PRIVATE	
NW-24-003-13W	40000	0	40000	PRIVATE/PRIVATE	
SE-24-003-13W	180000	0	180000	PRIVATE/PRIVATE	
NE-25-003-13W	200000	0	200000	PRIVATE/PRIVATE	
NW-25-003-13W	930000	10	837000	PRIVATE/PRIVATE	
SE-25-003-13W	480000	0	480000	PRIVATE/PRIVATE	
SW-25-003-13W	920000	0	920000	PRIVATE/PRIVATE	
NE-26-003-13W	1560000	5	1482000	PRIVATE/PRIVATE	
NW-26-003-13W	1920000	0	1920000	PRIVATE/PRIVATE	
SE-26-003-13W	390000	0	390000	PRIVATE/PRIVATE	
SW-26-003-13W	450000	0	450000	PRIVATE/PRIVATE	
NE-27-003-13W	1920000	15	1632000	PRIVATE/PRIVATE	
NW-27-003-13W	1260000	0	1260000	PRIVATE/PRIVATE	
SE-27-003-13W	510000	30	357000	PRIVATE/PRIVATE	
SW-27-003-13W	150000	0	150000	PRIVATE/PRIVATE	
NE-28-003-13W	1020000	0	1020000	PRIVATE/PRIVATE	
NW-28-003-13W	1920000	15	1632000	PRIVATE/PRIVATE	
SW-28-003-13W	600000	0	600000	PRIVATE/PRIVATE	
NE-29-003-13W	180000	20	144000	PRIVATE/PRIVATE	
SE-29-003-13W	20000	99	200	PRIVATE/PRIVATE	
SE-32-003-13W	10000	0	10000	PRIVATE/PRIVATE	
SE-33-003-13W	560000	30	392000	PRIVATE/PRIVATE	
SW-33-003-13W	440000	15	374000	PRIVATE/PRIVATE	

SE-34-003-13W	1375000	0	1375000	PRIVATE/PRIVATE
SW-34-003-13W	1350000	0	1350000	PRIVATE/PRIVATE
SE-35-003-13W	362500	0	362500	PRIVATE/PRIVATE
SW-35-003-13W	725000	5	688750	PRIVATE/PRIVATE
SW-36-003-13W	180000	25	135000	PRIVATE/PRIVATE
	DEPOSIT RESERVES		44410450	

EXPOSURE INFORMATION

EXPOSURE #: BB068 (NE-30-003-12W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: HIGHWAY, ROADWAY, RAILWAY
ECONOMIC THICKNESS: 3.5 METRES
ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE-MEDIUM SAND
SECTION HEIGHT: 3.5 M.
DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M.
OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-3.5 M. FINE TO MEDIUM SAND, OCCOSIONAL PEBBLE , POORLY BEDDED

EXPOSURE #: BB069 (NW-28-003-12W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: SUPERVISED WILDLIFE HABITAT
ECONOMIC THICKNESS: 4.0 METRES
ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE-MEDIUM SAND
SECTION HEIGHT: 4.0 M.
DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M.
OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
UNECONOMIC
GENERAL STRATIGRAPHY:
0.0-4.0 M. FINE TO MEDIUM SAND, PEBBLE FREE, MASSIVE TO POORLY BEDDED

EXPOSURE #: BB071 (NW-20-003-12W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT
LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES
ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE-MEDIUM SAND
SECTION HEIGHT: 4.0 M.
DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M.
OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-4.0 M. FINE TO MEDIUM SAND, PEBBLE FREE, DRY, POORLY BEDDED

EXPOSURE #: RY490 (SW-33-003-12W) VISITED: 8907
EXPOSURE TYPE: HAND/POWER AUGER HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY491 (NW-29-003-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: FINE SAND OVER PEBBLY FINE SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
1.0 M. FINE PEBBLE FREE SAND OVER
1.0 M. FINE SAND WITH OCCASIONAL PEBBLES

EXPOSURE #: RY492 (NE-19-003-12W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLE GRAVEL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
OVERGROWN REVEGATED PIT

EXPOSURE #: RY493 (NW-25-003-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SAND OVER PEBBLY SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY496 (SW-34-003-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER SAND
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:

GENERAL STRATIGRAPHY:
0.0-0.5 M. SOIL
0.5-2.0 M. PEBBLE GRAVEL, HIGH SHALE
2.0-2.5 M. FINE SAND

SIEVE ANALYSIS

	PERCENT PASSING											
	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB068 A (NE-30-003-12W)	100	100	100	99	99	98	96	85	39	18	15	SPARSE
BB069 A (NW-28-003-12W)	100	100	100	99	98	97	92	72	32	16	14	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

DEPOSIT # 012354

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-18-003-12W	930000	0	930000	PRIVATE/PRIVATE	
SW-18-003-12W	360000	0	360000	PRIVATE/PRIVATE	
NW-19-003-12W	1350000	0	1350000	PRIVATE/PRIVATE	
SW-19-003-12W	90000	0	90000	PRIVATE/PRIVATE	
SW-30-003-12W	720000	0	720000	PRIVATE/PRIVATE	
NE-13-003-13W	1320000	0	1320000	PRIVATE/PRIVATE	
NW-13-003-13W	1740000	0	1740000	PRIVATE/PRIVATE	
SE-13-003-13W	720000	0	720000	PRIVATE/PRIVATE	
SW-13-003-13W	1825000	0	1825000	PRIVATE/PRIVATE	
NE-14-003-13W	3200000	0	3200000	PRIVATE/PRIVATE	
NW-14-003-13W	3200000	0	3200000	PRIVATE/PRIVATE	
SE-14-003-13W	1925000	25	1443750	PRIVATE/PRIVATE	
SW-14-003-13W	2450000	30	1715000	PRIVATE/PRIVATE	
NE-15-003-13W	3200000	0	3200000	PRIVATE/PRIVATE	
NW-15-003-13W	2440000	10	2196000	PRIVATE/PRIVATE	
SE-15-003-13W	200000	0	200000	PRIVATE/PRIVATE	
SW-15-003-13W	1080000	0	1080000	PRIVATE/PRIVATE	
NE-16-003-13W	1515000	2	1484700	PRIVATE/PRIVATE	
NW-16-003-13W	765000	0	765000	PRIVATE/PRIVATE	
NW-17-003-13W	150000	0	150000	PRIVATE/PRIVATE	
NE-19-003-13W	292500	0	292500	PRIVATE/PRIVATE	
SE-19-003-13W	472500	0	472500	PRIVATE/PRIVATE	
NE-20-003-13W	1840000	0	1840000	PRIVATE/PRIVATE	
NW-20-003-13W	1260000	0	1260000	PRIVATE/PRIVATE	
SE-20-003-13W	2420000	0	2420000	PRIVATE/PRIVATE	

SW-20-003-13W	2025000	30	1417500	PRIVATE/PRIVATE
NE-21-003-13W	2880000	0	2880000	PRIVATE/PRIVATE
NW-21-003-13W	2880000	0	2880000	PRIVATE/PRIVATE
SE-21-003-13W	2880000	0	2880000	PRIVATE/PRIVATE
SW-21-003-13W	2880000	0	2880000	PRIVATE/PRIVATE
NE-22-003-13W	2560000	15	2176000	PRIVATE/PRIVATE
NW-22-003-13W	2560000	0	2560000	PRIVATE/PRIVATE
SE-22-003-13W	2560000	0	2560000	PRIVATE/PRIVATE
SW-22-003-13W	2560000	0	2560000	PRIVATE/PRIVATE
NE-23-003-13W	2560000	0	2560000	PRIVATE/PRIVATE
NW-23-003-13W	2560000	0	2560000	PRIVATE/PRIVATE
SE-23-003-13W	3200000	0	3200000	PRIVATE/PRIVATE
SW-23-003-13W	3200000	0	3200000	PRIVATE/PRIVATE
NE-24-003-13W	1860000	10	1674000	PRIVATE/PRIVATE
NW-24-003-13W	1860000	0	1860000	PRIVATE/PRIVATE
SE-24-003-13W	1650000	0	1650000	PRIVATE/PRIVATE
SE-24-003-13W	1650000	0	1650000	PRIVATE/PRIVATE
SW-24-003-13W	1860000	0	1860000	PRIVATE/PRIVATE
SE-25-003-13W	1200000	0	1200000	PRIVATE/PRIVATE
SW-25-003-13W	540000	0	540000	PRIVATE/PRIVATE
SE-26-003-13W	2040000	0	2040000	PRIVATE/PRIVATE
SW-26-003-13W	1960000	0	1960000	PRIVATE/PRIVATE
NW-27-003-13W	810000	20	648000	PRIVATE/PRIVATE
SE-27-003-13W	1410000	0	1410000	PRIVATE/PRIVATE
SW-27-003-13W	1740000	0	1740000	PRIVATE/PRIVATE
NE-28-003-13W	840000	25	630000	PRIVATE/PRIVATE
SE-28-003-13W	1275000	0	1275000	PRIVATE/PRIVATE
SW-28-003-13W	1920000	0	1920000	PRIVATE/PRIVATE
SE-33-003-13W	255000	85	38250	PRIVATE/PRIVATE
SW-34-003-13W	180000	99	1800	PRIVATE/PRIVATE
	DEPOSIT RESERVES		90385000	

EXPOSURE INFORMATION

EXPOSURE #: BB072 (SW-26-003-13W) VISITED: 9005

EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY

SURROUNDING LAND USE: AGRICULTURE, HAYING

ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:LOW

SECTION: A MATERIAL DESCRIPTION: MEDIUM SAND OCCASIONAL PEBBLE

SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.

HEIGHT SAMPLED: 3.5 M. OVERBURDEN THICKNESS: 0.3 M.

MATERIAL AT BASE: SAND

SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS

ADDITIONAL INFORMATION:

GENERAL STRATIGRAPHY:

0.0-0.3 M. SOIL

0.3-4.0 M. FINE TO MEDIUM SAND, POORLY BEDDED, OCCASIONAL PEBBLE

EXPOSURE #: RY451 (SW-18-003-12W) VISITED: 8906
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 6.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 6.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY471 (SW-20-003-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 4.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
STOCKPILES <2.5 CM. MATERIAL, AT LEAST 0.0-0.5 M. SOIL
200 000 CUBIC METRES REMOVED, PIT 0.5-1.2 M. MASSIVE PEBBLE GRAVEL
GENERALLY 2.5 M. DEEP, COARSER AT 1.2-4.5 M. BEDDED PEBBLE SAND DIPPING TO EAST
TOP GRADING TO BEDDED SAND AT BASE,
WEST END OF PIT INACTIVE AND OVERGROWN

EXPOSURE #: RY472 (SW-14-003-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL WITH SAND BEDS
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.5 M. SOIL
0.5-1.0 M. BEDDED PEBBLE GRAVEL DIPPING TO SOUTH
1.0-2.2 M. BEDDED SAND WITH PEBBLE BEDS, COARSE AND FINE SAND BEDS
2.0-3.0 M. PEBBLE GRAVEL, MASSIVE
3.0-5.0 M. SCREE

EXPOSURE #: RY473 (SE-14-003-13W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: RECREATION SITE
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SANDY PEBBLE GRAVEL
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
INACTIVE PIT, 150 000 CUBIC METRES 0.0-0.2 M. SOIL
REMOVED 0.2-1.5 M. BEDDED PEBBLES AND SAND
1.5-2.5 M. POORLY BEDDED PEBBLE GRAVEL
2.5-5.0 M. SCREE, FACE OBSCURED

EXPOSURE #: RY495 (NW-23-003-13W) VISITED: 8907
EXPOSURE TYPE: HAND DUG HOLE LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL HIGH SHALE
SECTION HEIGHT: 0.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB072 A (SW-26-003-13W)		100	99	98	98	93	88	81	68	42	16	12	SPARSE
RY471 A (SW-20-003-13W)		100	97	90	81	69	58	45	30	11	8	8	SPARSE
RY472 A (SW-14-003-13W)		100	94	83	70	60	51	42	24	9	6	6	SPARSE
RY473 A (SE-14-003-13W)		100	97	84	65	51	38	26	15	8	7	6	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB072 A	4	0	0	96	100	SHALE 4.7-9.5 MM. = 100 %
RY472 A	66	0	0	34	27	SHALE 4.7-9.5 MM. = 38%
RY473 A	34	14	0	52	37	SHALE 4.7-9.5 MM. = 25%
RY471 A	51	0	3	46	33	SHALE 4.7-9.5 MM. = 40%

DEPOSIT # 012355

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-17-003-12W	160000	0	160000	PRIVATE/PRIVATE	
NW-17-003-12W	1040000	0	1040000	PRIVATE/PRIVATE	
NE-18-003-12W	1200000	30	840000	PRIVATE/PRIVATE	
SE-18-003-12W	20000	0	20000	PRIVATE/PRIVATE	
SE-19-003-12W	15000	99	150	PRIVATE/PRIVATE	
SE-20-003-12W	1050000	40	630000	PRIVATE/PRIVATE	
SW-20-003-12W	1102500	15	937125	PRIVATE/PRIVATE	
SW-21-003-12W	120000	90	12000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		3639275		

EXPOSURE INFORMATION

EXPOSURE #: RY474 (NE-18-003-12W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND AND SAND
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
STOCKPILES OF <2.5 CM. MATERIAL, 0.0-0.2 M. SOIL
200 000 CUBIC METRES REMOVED, PIT 0.2-2.5 M. FINE SAND AND PEBBLE BEDS
150 M. X 120 M. 2.5-3.5 M. SCREE

EXPOSURE #: RY475 (NE-18-003-12W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: COBBLY PEBBLE GRAVEL
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PIT NEXT TO RY474, 3 000 CUBIC 0.0-0.2 M. SOIL
METRES REMOVED 0.2-1.5 M. COBBLY PEBBLE GRAVEL, MASSIVE
1.5-3.0 M. POORLY BEDDED COBBLE PEBBLE GRAVEL WITH BEDDED COARSE SAND AT BASE
3.0-5.0 M. SCREE

EXPOSURE #: RY476 (SW-21-003-12W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 7.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 7.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 4.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
BORROW PIT, HIGH SHALE, PIT APPEARS TO BE ON ROAD ALLOWANCE RIGHT OF WAY
0.0-0.2 M. SOIL
0.2-4.0 M. HORIZONTALLY BEDDED PEBBLE GRAVEL
4.0-7.0 M. SCREE

EXPOSURE #: RY477 (SE-20-003-12W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION:
SECTION HEIGHT: 0.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE:
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
NOT ABLE TO GET INTO PIT, SEE RY476 ACROSS ROAD FROM PIT

EXPOSURE #: RY478 (NE-17-003-12W) VISITED: 8907
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: VERY FINE BEDDED SAND
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 3.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
PIT ALONG EDGE OF SPILLWAY, UNECONOMIC
0.0-0.5 M. SOIL
0.5-3.0 M. FINE BEDDED SAND

EXPOSURE #: RY487 (SW-20-003-12W) VISITED: 8907
EXPOSURE TYPE: SAND AND GRAVEL PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER PEBBLE SAND
SECTION HEIGHT: 3.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.5 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
INACTIVE PIT, OVERGROWN, 50 000 CUBIC METRES REMOVED, PILES OF STRIPPING IN PIT
0.0-0.5 M. SOIL
0.5-1.0 M. POORLY BEDDED PEBBLE GRAVEL
1.0-3.5 M. MASSIVE TO POORLY BEDDED PEBBLE SAND

SIEVE ANALYSIS

	PERCENT PASSING											
	OVERSIZED	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY474 A (NE-18-003-12W)		100	98	92	85	79	71	57	26	11	9	8	SPARSE
RY475 A (NE-18-003-12W)		94	86	73	59	46	36	24	12	7	6	5	MODERATE
RY476 A (SW-21-003-12W)		100	96	84	55	41	32	24	14	8	7	7	SPARSE
RY478 A (NE-17-003-12W)		100	100	100	100	100	100	99	93	25	8	7	SPARSE
RY487 A (SW-20-003-12W)		100	97	89	79	67	57	47	33	14	9	8	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm.)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY474 A	37	10	3	50	37	SHALE 4.7-9.5 MM. = 38%
RY475 A	39	2	0	59	29	SHALE 4.7-9.5 MM. = N/A
RY476 A	42	3	0	55	40	SHALE 4.7-9.5 MM. = 34%
RY487 A	22	25	0	54	29	SHALE 4.7-9.5 MM. = N/A

DEPOSIT # 012356

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NW-19-004-14W	120000	99	1200	PRIVATE/PRIVATE	
SE-30-004-14W	70000	.0	70000	PRIVATE/PRIVATE	
SW-30-004-14W	80000	90	8000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		79200		

EXPOSURE INFORMATION

EXPOSURE #: RY455 (NW-19-004-14W)
EXPOSURE TYPE: BORROW PIT
ECONOMIC THICKNESS: 2.0 METRES
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL OVER SAND
SECTION HEIGHT: 1.5 M.
HEIGHT SAMPLED: 0.0 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
BORROW PIT FOR FARM USE, INDIAN BURIAL GROUND, 25 CUBIC METRES REMOVED, POOR ACCESS

VISITED: 8906
LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ESTIMATED STONE CONTENT:LOW
DEPTH TO WATER TABLE: M.
OVERBURDEN THICKNESS: 0.5 M.

GENERAL STRATIGRAPHY:
0.0-0.5 M. SOIL
0.5-1.0 M. PEBBLE GRAVEL, HIGH SHALE
1.0-1.5 M. FINE SAND

DEPOSIT # 012357

LOCATION	INITIAL RESERVES (m^3)	PERCENT DEPLETED	REMAINING RESERVES (m^3)	OWNER (SURFACE/GRAVEL)	OWNER 2 (SURFACE/GRAVEL)
NE-28-003-12W	430000	0	430000	PRIVATE/PRIVATE	
NW-28-003-12W	600000	0	600000	PRIVATE/PRIVATE	
NE-29-003-12W	200000	0	200000	PRIVATE/PRIVATE	
SE-33-003-12W	140000	0	140000	PRIVATE/PRIVATE	
SW-33-003-12W	80000	0	80000	PRIVATE/PRIVATE	
	DEPOSIT RESERVES		1450000		

TOTAL REPORT RESERVES **255820915**

ADDITIONAL INFORMATION (DATA NOT INCLUDED IN MAPPED DEPOSITS)

EXPOSURE INFORMATION

EXPOSURE #: BB061 (NE-22-003-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: PASTURE, GRAZING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:HIGH
SECTION: A MATERIAL DESCRIPTION: BOULDERY COBBLE GRAVEL
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SURFACE COVERED WITH 0.3-0.5 M.
BOULDERS, TOO HARD TO BACKHOE

EXPOSURE #: BB078 (NE-15-004-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 0.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-4.0 M. PEBBLY COARSE SAND, OCCASIONAL SILT LENS

SIEVE ANALYSIS

	PERCENT PASSING											
	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB078 A (NE-15-004-13W)	100	100	98	95	89	79	63	48	36	27	23	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB078 A	1	3	1	95	79	SHALE 4.7-9.5 MM.= 99%

EXPOSURE #: BB109 (SW-06-006-13W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 6.5 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.2 M.
MATERIAL AT BASE: SILT
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION:
GENERAL STRATIGRAPHY:
0.0-0.2 M. SOIL
0.2-2.5 M. SHALE RICH PEBBLY SAND
2.5-4.0 M. FINE SAND HORIZONTALLY BEDDED
4.0 SILT

SIEVE ANALYSIS

	PERCENT PASSING											
	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
BB109 A (SW-06-006-13W)	100	95	80	73	61	51	40	30	20	15	13	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
BB109 A	9	0	2	89	82	SHALE 4.7-9.5 MM. = 78%

EXPOSURE #: BB121 (NW-30-006-14W) VISITED: 9005
EXPOSURE TYPE: BACKHOE TEST PIT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 4.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLE GRAVEL
SECTION HEIGHT: 4.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION:
REWORKED SHALE BEDROCK,
UNECONOMIC
GENERAL STRATIGRAPHY:
0.0-0.3 M. SOIL
0.3-4.0 M. SHALE RICH SILTY PEBBLE GRAVEL, ROUNDED SHALE CLASTS, ESTIMATED 98% SHALE CLASTS

EXPOSURE #: RY469 (SE-14-005-13W) VISITED: 8907
EXPOSURE TYPE: BEDROCK QUARRY LAND USE: ACTIVE PIT
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SHALE PIT
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 1.0 M.
MATERIAL AT BASE: BEDROCK
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY479 (NW-05-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: PASTURE, GRAZING
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 3.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: VERY FINE SAND AND SILT LENS
SECTION HEIGHT: 3.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
ROADCUT WITH 3 M. VERY FINE SAND,
UNECONOMIC

EXPOSURE #: RY484 (NW-23-004-12W) VISITED: 8907
EXPOSURE TYPE: BEDROCK QUARRY LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 6.5 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SHALE PIT
SECTION HEIGHT: 0.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: BEDROCK
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
INACTIVE

EXPOSURE #: RY485 (NW-24-004-12W) VISITED: 8907
EXPOSURE TYPE: BEDROCK QUARRY LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 11.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SHALE BORROW PIT
SECTION HEIGHT: 0.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: BEDROCK
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY486 (SE-10-004-12W) VISITED: 8907
EXPOSURE TYPE: BEDROCK QUARRY LAND USE: PIT-TEMPORARY USE
SURROUNDING LAND USE:
ECONOMIC THICKNESS: 5.0 METRES ESTIMATED STONE CONTENT :
SECTION: A MATERIAL DESCRIPTION: SHALE BORROW PIT
SECTION HEIGHT: 5.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: BEDROCK
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
ACTIVE, 1 000 CUBIC METRES REMOVED

EXPOSURE #: RY519 (NW-14-004-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:

EXPOSURE #: RY540 (NW-08-004-12W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILT OVER GRAVEL
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE:
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
MAY BE GRAVEL LENS IN SILT DEPOSIT 0.0-0.5 M. SOIL
0.5-2.0 M. SILT
2.0-2.5 M. SANDY PEBBLE GRAVEL

EXPOSURE #: RY550 (SW-31-006-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLE GRAVEL SHALE RICH
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
UNECONOMIC, HIGH SHALE AND SILT

EXPOSURE #: RY551 (SW-29-006-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM
SECTION: A MATERIAL DESCRIPTION: COARSE PEBBLY SHALE
SECTION HEIGHT: 1.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 1.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
TERRACE OF REWORKED SHALE

EXPOSURE #: RY553 (NW-24-006-14W) VISITED: 8907
EXPOSURE TYPE: BORROW PIT LAND USE: PIT-NOT IN USE(COMMONLY REVEGETATED)
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: PEBBLY COARSE SAND
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY :
100% SHALE PEBBLES, ANGULAR SHALE
CLASTS

SIEVE ANALYSIS

	PERCENT PASSING											
	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY553 A (NW-24-006-14W)	100	100	97	86	72	57	45	36	32	31	30	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY553 A	-	-	-	-	100	SHALE 4.7-9.5 MM. = 100%

EXPOSURE #: RY566 (SW-06-006-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:LOW
SECTION: A MATERIAL DESCRIPTION: SILTY PEBBLY SAND OVER SILT
SECTION HEIGHT: 1.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.0 M.
MATERIAL AT BASE: SILT
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
HIGH SILT 0.0-1.0 M. SILTY PEBBLE SAND WITH GRAVEL LENSES
1.0-1.3 M. VERY FINE SAND AND SILT

EXPOSURE #: RY576 (NE-36-005-14W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.5 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SILTY PEBBLE GRAVEL HIGH SHALE
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 2.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: SAND AND GRAVEL
SEE SIEVE ANALYSIS AND PETROGRAPHIC ANALYSIS
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
DEPOSIT CONSISTS ALMOST ENTIRELY OF
SHALE CLASTS AND SILTY GRAVEL, ALMOST
A REWORKED BEDROCK, UNECONOMIC

SIEVE ANALYSIS

	PERCENT PASSING											
	3.0	1.5	3/4	3/8	# 4	# 8	#16	#30	#50	#100	#200	(PLUS 6")
RY576 A (NE-36-005-14W)	100	97	85	66	46	36	29	24	21	18	17	SPARSE

(NOTE: ALL SAMPLES ARE 100% PASSING 6 INCHES)

PETROGRAPHIC ANALYSIS (19.1-38.1 mm)

SAMPLE	% GOOD	% FAIR	% POOR	% DELETERIOUS	% SHALE (BY WEIGHT)	COMMENTS
RY576 A	3	8	0	89	79	SHALE 4.7-9.5 MM. = 75%

EXPOSURE #: RY578 (NW-31-005-13W) VISITED: 8907
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 2.0 METRES ESTIMATED STONE CONTENT:MEDIUM LOW
SECTION: A MATERIAL DESCRIPTION: SHALE RICH PEBBLE GRAVEL
SECTION HEIGHT: 2.0 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.3 M.
MATERIAL AT BASE: SAND AND GRAVEL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
VERY HIGH SHALE (>90%),SHALE CLASTS
LARGE AND ANGULAR

EXPOSURE #: RY587 (NE-13-005-13W) VISITED: 8908
EXPOSURE TYPE: DITCH OR ROAD CUT LAND USE: HIGHWAY, ROADWAY, RAILWAY
SURROUNDING LAND USE: AGRICULTURE, HAYING
ECONOMIC THICKNESS: 1.0 METRES ESTIMATED STONE CONTENT:MEDIUM HIGH
SECTION: A MATERIAL DESCRIPTION: GRAVEL ON FLANK OF HILL -MINOR
SECTION HEIGHT: 2.5 M. DEPTH TO WATER TABLE: M.
HEIGHT SAMPLED: 0.0 M. OVERBURDEN THICKNESS: 0.5 M.
MATERIAL AT BASE: TILL
NO CHANNEL SAMPLE TAKEN
ADDITIONAL INFORMATION: GENERAL STRATIGRAPHY:
SMALL BORROW PIT

APPENDIX B: GRAIN SIZE CLASSIFICATION

Screen	mm			
4"	101.6	maximum size sampled	Boulders	
			+256mm	−8 phi
3 1/2"	88.9		Cobbles	
3"	76.2	Gravel		
2 1/2"	63.5			
2"	50.8			−6 phi
1 1/2"	38.1		Coarse	
1"	25.4			
3/4"	19.1			Pebbles
5/8"	15.9		Medium	
1/2"	12.7			
3/8"	9.5			
1/4"	6.35		Fine	
# 4	4.76			
# 8	2.38	Sand		−2 phi
			Granules	
#10	2.00			−1 phi
#16	1.19		Coarse	
#30	0.59			
#40	0.42		Medium	
#50	0.30			Sand
#80	0.177		Fine	
#100	0.149			
#200	0.074			
< 200	< 0.074	Fines	Silt & Clay < 0.063mm	+4 phi

APPENDIX C: GLOSSARY

AGGREGATE

Any inert, construction material (sand, gravel, slag, crushed stone or other mineral material).

AGGREGATE RESERVES

Aggregate in a deposit which is proven and is economically signficiant.

ALLUVIUM

Alluvium is a general term for clay, silt, sand, gravel, or similar unconsolidated material deposited during postglacial time by a stream.

BEACH DEPOSITS

These are relatively narrow, linear features formed at the shores of glacial lakes that existed during deglaciation. Well developed beaches are usually less than 20 feet (6 m) thick. The aggregate is well sorted and stratified and sand-sized material commonly predominates.

BEDROCK

In-place pre-Quaternary material exposed at the surface or underlying the surficial material.

BINDER

Material that produces or promotes consolidation in loosely aggregated sediments. Usually mud or clay, sometimes till is used for binder.

CARBONATE ROCKS

A broad term referring to those sedimentary rocks consisting chiefly of carbonate minerals, mainly limestone and dolostone.

CLAST

An individual constituent, grain, or fragment of a sediment or rock, produced by the mechanical weathering of a large rock mass. Synonyms include particle and fragment.

CROWN LAND

Land reserved and administered by the Crown. Sand and gravel usually administered by the Crown.

CROWN SAND AND GRAVEL

Sand and gravel reserved and administered by the Crown.

DELETERIOUS LITHOLOGY

A general term used to designate those rock types which are chemically or physically unsuited for use as construction or road-building aggregates. Such lithologies as chert, shale, siltstone, and sandstone may deteriorate rapidly.

DEPOSIT

An accumulation of sediments left in a new location by a natural transportative agent such as water, wind, ice, or gravity.

An aggregate deposit is a deposit of sand and gravel considered to be of economic significance.

DIRT

See fines.

DOLOMITE (DOLOSTONE)

A carbonate sedimentary rock consisting chiefly of the mineral dolomite and containing relatively little calcite (dolomite is also known as dolostone).

DRIFT

A general term for all unconsolidated rock debris transported from one place and deposited in another; distinguished from underlying bedrock. In North America, glacial activity has been the dominant mode of transport and deposition of drift. Synonyms include overburden and surficial deposit.

DURABLE ROCK

A rock fragment which is hard and inert and can be used as aggregate without breaking, crumbling or reacting with the cementing material.

EOLIAN

Pertaining to wind action.

EPOCH

A geological-time unit longer than an age and a subdivision of a period.

ESKERS

Eskers are narrow, sinuous ridges of sand and gravel. They vary greatly in size. Many eskers consist of a central core of poorly sorted and stratified gravel. The core material is often draped by better sorted and stratified sand and gravel.

FINES

A general term used to describe the size fraction of an aggregate which passes (is finer than) the No. 200 mesh screen (0.074 mm). Also described informally as "dirt", these particles are in the silt- and clay-size range.

FLUVIAL

Pertaining to rivers or streams.

GLACIOFLUVIAL DEPOSITS

Material deposited by streams flowing from, on, or within melting glacier ice, generally composed of sorted, stratified sand and gravel; includes outwash, kame, esker, etc.

GLACIOLACUSTRINE DELTAS

These features were formed where streams or rivers of glacial meltwater flowed into lakes and deposited their suspended sediment. Such deposits tend to consist mainly of sand and abundant silt. However, in near-ice or ice-contact positions, coarse material may be present.

GLACIOLACUSTRINE DEPOSITS

Material deposited in lakes affected by glacier ice or by meltwater flowing directly from glaciers; composed of well-sorted clay, silt, or sand.

GRANULAR BASE COURSE

Components of a road placed on subgrade and designed to provide strength, stability, and drainage, as well as support for surfacing materials. Several types have been defined: Granular Base Course A consists of crushed and processed aggregate and has relatively stringent quality standards in comparison to Granular Base Course B and C which are usually pit-run or other unprocessed aggregate.

GROUND MORAINE

A deposit of till with a flat or undulating surface.

HOLOCENE

An epoch of the Quaternary period covering the time period from the retreat of the continental glaciers to the present, about 10 000 years.

HUMMOCKY

An irregular or knob and kettle surface.

HUMMOCKY MORAINE

A landscape composed primarily of till with a hummocky surface.

ICE-CONTACT DEPOSIT

Material deposited in contact with glacier ice by meltwater; includes kames, eskers, kame terraces, etc.

ICE-CONTACT TERRACES

These are glaciofluvial features deposited between the glacial margin and a confining topographic high, such as the side of a valley. The structure may be similar to outwash deposits.

KAMES

Kames are mounds of poorly sorted sand and gravel deposited by meltwater in depressions or fissures on the ice surface or at its margin. The deposits consist mainly of irregularly bedded and cross-bedded, poorly sorted sand and gravel. Deposits include single mounds, linear ridges (crevasse fillings) or complex groups of landforms.

LACUSTRINE DEPOSIT

Material deposited in a lake.

LITHOLOGY

The description of rocks on the basis of such characteristics as color, structure, mineralogic composition, and grain size. Generally, the description of the physical character of a rock.

MELTWATER CHANNEL

A drainage way produced by water flowing away from a melting glacier margin.

MORAINE

A distinct accumulation of glacial drift. Could represent an ice marginal position.

OUTWASH

Outwash deposits consist of sand and gravel laid down by meltwaters beyond the margin of the ice lobes. They occur as sheets or as terraced valley fills (valley trains) and may be very large in extent and thickness. Well developed outwash deposits have good horizontal bedding and are uniform in grain-size distribution. Outwash deposited near the glacier's margin is much more variable in texture and structure.

PIT RUN

Unprocessed aggregate removed from pit. Generally consists of fine pebble gravel with minor amounts of material coarser than 38 mm (1 1/2"). It is used for road maintenance, upgrading and resurfacing.

PLEISTOCENE

An epoch of the recent geological past including the time from approximately 1.8 million years ago to 10 000 years ago. Much of the Pleistocene was characterized by extensive glacial activity.

QUATERNARY

The second period of the Cenozoic era, thought to cover the last 2-3 million years. It consists of two epochs: The Pleistocene and the Holocene.

RESOURCE

An aggregate deposit or environment which may or may not be proven and is presently not economically significant.

SHALE

A fine-grained, sedimentary rock formed by the consolidation of clay, silt, or mud and characterized by well developed bedding planes, along which the rock breaks readily into thin layers. The term shale is also commonly used for fissile claystone, siltstone, and mudstone.

SPILLWAY

Large drainage valley formed by meltwater flowing from a glacial lake. Spillways often have gravel terraces.

STONE

That component of aggregate coarser than 4.76 mm or the #4 sieve, includes pebbles, cobbles and boulders.

SURFICIAL GEOLOGY

A form of geological mapping dealing with all materials occurring at surface in an area: unlithified or lithified (sediments or bedrock).

TERRACE

A relatively flat, stair-stepped, depositional or erosional surface bounded by an ascending slope on one side and a descending slope on the other.

TILL

Unsorted and unstratified rock debris, deposited directly by glaciers, and ranging in size from clay to large boulders.

WISCONSINAN

Pertaining to the last glacial stage of the Pleistocene Epoch in North America. It began approximately 100 000 years ago and ended approximately 10 000 years ago. The glacial deposits and landforms of southern Manitoba are predominantly the result of glacial activity during the Winsconsinan Stage.

MAPS
NOT
FILMED

CARTES
OMISES